Determinants of Firm Growth with respect to Exporting and Innovation Activities: Evidence from Egyptian SMEs

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Thesis Summary

Small and medium-sized enterprises (SMEs) are considered to be the driving engine for employment growth, source of innovation and technological progress. Moreover, the success of small exporters is critical for economic growth and is considered as an important development stage for many SMEs. However, their competitive advantage lies within the firm's ability to innovate.

This thesis contributes to the above literature by examining two main factors believed to promote firm growth namely 'exporting' and 'innovation' activities. Growing interests on the relationship between exporting, innovation and growth have recently been tackled. However, there remains a gap in literature on the relationship between exporting, innovation and firm growth for SMEs in emerging economies. Previous studies are conducted in developed counties such as UK, Ireland, USA, Germany, and Switzerland, which leaves the gap for those developing countries. Thus, this thesis addresses the gap by examining the importance of innovation and exporting activities in the growth of SMEs in Egypt. It is also the researcher's intent to recognise the unique contribution of innovation on firm exporting activities covering all sectors.

Egypt, one of the countries that were tremendously affected by the so-called 'Arab Spring revolution', is suffering from slow economic growth, high unemployment and poverty rate. Thus, the government must ensure economic growth and job creation. Programmes to encourage and develop SMEs should be part of inclusive growth strategy. Meanwhile, exporting is regarded as a key factor to help the economy recover from recession and stimulate economic growth. On the other hand, innovation leads to better performance in terms of growth, exporting and productivity. Therefore, SMEs and their exporting and innovation activities should be an integral part of any recovery and growth strategy for the economy.

Moreover, Egypt is suffering from the so-called 'Missing Middle', which is problematic as medium firms tend to provide better employment growth and productivity. Therefore, more light is to shed on the importance of exporting and innovation in the growth of firms.

The research design was quantitative in nature, testing the proposed hypotheses. The study was conducted in 2013 based on questionnaires of 406 Egyptians SMEs. The results of the empirical study suggest that both exporting and innovation activities are important in firm growth. However, the results show that, after controlling for endogeneity, innovation does not affect exporting activities in SMEs.

Keywords: Innovation, Exporting, Growth, SMEs, Missing Middle, Egypt

Dedication

This thesis is dedicated to:

My parents, brothers, and sister

My beloved husband, Amr

&

My adorable children, Kareem and Dareen

For their endless love, support and encouragement

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List of Abbreviation

BUE	The British University in Egypt
CAPMAS	Central Agency of Mobilization and Statistics
ECES	Egyptian Centre for Economic Studies
ERC	Enterprise Research Centre
GAFI	General Authority for Investment and Free Zones
GDP	Gross Domestic Products
GOEIC	General Organisation for Exports and Imports Centre
GMM	General Method of Moments
IDA	Industrial Development Authority
IDSC	Information and Decision Support Centre
LEAD	Leading Enterprise and Development
MENA	Middle East and North Africa
MoFT	Ministry of Foreign Trade
MoTI	Ministry of Trade and Industry
MNEs	Multinational Enterprise
MSMEs	Micro, small and medium-enterprises
OECD	Organisations for Economic Co-operation and Development
PPP	Purchasing Power Parity
SFD	Social Fund for Development
SLS	Steps Least Squares
SPSS	Statistical Package for Social Science
SMEs	Small and medium-enterprises
UKTI	UK Trade and Investment

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Chapter 1: Introduction

1.1 Introduction

Economic experts, scholars, practitioners, and policy makers have shown interest in small and medium-sized enterprises (SMEs) as they are considered to be the backbone of any economy, the engine for economic growth, a major player in job creation, productivity growth, and source of innovation in both developed and developing countries (Li and Rama, 2015; Love and Roper, 2015; Aceleanu et al., 2014; Wright and Stigliani, 2012; Henrekson and Johansson, 2010; Acs et al., 2008; Schreyer, 2000). Empirical studies in the UK suggest that 4-6% of fast-growing firms contribute from half to three-quarters of job opportunities thus, help economies to recover from recessions (Roper and Hart, 2013). All over the world, SMEs are supported due to their ability to boost entrepreneurial skills and flexibility to adapt quickly to market change (Venkatesh and Muttiah, 2012). Their importance could not be neglected and the need to investigate their role is increasing. However, the extent in which SMEs contribute to economic growth varies from country to another which highlights the need for cross-country analyses. Although SMEs provide much impetus for economic development, empirical evidence found that only a few small firms do grow quickly accounting for the majority of job opportunities (Roper and Hart, 2013; Bridge et al. 2003). Several explanations have been offered to examine the factors affecting growth which are many and complex (Love and Roper, 2015; Colombelli, 2015; Love et al., 2015; Obeng et al., 2014: Robson et al., 2012; Davidsson et al., 2005; Smallbone and Wyer, 2000; Hart and McGuinness, 2003; Andersson, 2003; Storey, 1994; Barkham et al., 1996). Thus, there is a need to develop more understanding regarding the determinants of SMEs growth as the majority of recent studies focused on developed countries or high-technological industries which leave a gap for those emerging countries specifically in Egypt.

On the other hand, globalisation attracts interest to the role of SMEs in economic development. Since early 1990's, international entrepreneurship has attracted attention and was important as a mean to enhance performance, growth, productivity of firms, and economies (Golovko and Valentini, 2011; Knight and Kim, 2009; Aw et al., 2007, 2009, cited in Damijan and Kostevc, 2015; Cassiman et al., 2010; Cassiman and Golovko, 2009; Wagner, 2007; Knight, 2001; Lyon et al., 2000; Lu and Beamish, 2001; Westhead et al., 2001; Knight, 2000). It was found that small firms engaging in exporting activities grow more than twice as fast as those who are non-exporters (Love and Roper, 2014). As the competition increases and becomes fierce, due to the increasing number of firms that are engaging in the global market, innovation is considered to be

a source of competitiveness and essential for the survival of firms (Roper and Xia, 2014a; Love and Roper, 2015; Carree et al., 2011). Moreover, small firms maintain their competitiveness through innovation which was found to enhance their exporting activities (Palangkaraya, 2012; Ganotakis and Love, 2011; McNaughton, 2003; Roper et al., 2006; Roper and Love, 2001; Kleinknecht and Oostendorp, 2002; Lefebvre and Lefebvre, 2002). It was found that innovative SMEs in the UK are 7-10 percent more likely to export than non-innovators (Love and Roper, 2014) while innovators reported higher exporting rate (Robson et al., 2012). However, in most developing countries the exported goods are mainly borne by larger firms. Thus, there is a need to study the role of innovation on SMEs exporting in developing and emerging economies. The world economy is changing rapidly and becoming more integrated, barriers to engaging in the global market are decreasing resulting in the importance of competitive advantage for the survival of firms. As a result, governments and policy-makers role to promote innovation and export in small firms become more vital.

The stream of literature addressing entrepreneurship internationalisation and innovation issues remains unresolved because of research limitations. While some studies focused on high-technology firms in developed countries (Veglio and Zucchella, 2015; Zahra et al., 2000; Autio et al., 2000) few were conducted on developing ones. Furthermore, most studies focused on the relationship between innovation and internationalisation in large or high technological firms (Pla-Barker and Alegre, 2007; Onetti et al., 2012 cited in Veglio and Zucchella, 2015) which calls for the need to study traditional firms in developing countries to bridge the research gap (Zucchella and Siano, 2014; Veglio and Zucchella, 2015). Moreover, scholars have looked to entrepreneurship to gain an understanding of firm internationalisation as its behaviour was found to have a positive effect on firm performance and offers a contribution to the stream of literature to internationalisation theories (Pham, 2015; Oviatt and McDougall, 2005; McDougall and Oviatt, 2000; Zahra et al., 2005). However, there is a lack of studies on emerging countries and more research is needed to allow for future comparative studies to see whether they are applicable in emerging countries.

Meanwhile, literature has shown that entrepreneurs are opportunity seekers, innovative, and creative (Stokes and Wilson, 2010) and this combination of characteristics can explore the success of firms and act as an evidence of “born-global” (Knight, 2000). Research on the new venture and “born-global” firms has provided an array of findings regarding the effect of internationalisation on firm productivity and growth. A positive relationship between productivity and exporting was found to be related to firm innovation (Cassiman and Golovko, 2011; Littunen and Niittykangas, 2010; Ito and Lechevalier, 2010; Lee and Kang, 2007). Concurrently, research

on innovation encompassing new and improved products, processes, and marketing ideas were found to affect the performance of firms, productivity, and exporting (Damijan and Kostevc, 2015; Monreal-Pérez et al., 2012; Ganotakis and Love, 2011; Roper and Love, 2002; Griffith et al., 2004; Basile, 2001, Cassiman and Martinez-Ros, 2007). However, the lack of research examining the relationship between innovation and exporting in emerging countries is remarkably stark, with Egypt being the focus of research. Moreover, Egypt was suffering from recession during the researched period which creates a burden on the economy and the need to examine firm growth is vital for alleviating it. It is important to examine how firm behaved on the exporting, innovation, and growth level for improving the economy. Given the vital role that SMEs play in the development of economies, as a source of jobs, and engine for growth (Coad, 2007; Acs et al., 2008; NESTA, 2011, cited in Du and Temouri, 2015) it is even more important to study their impact in one of the emerging countries, Egypt. As a result of the vulnerability of the Middle East area after the so-called 'Arab Spring' that hit the region 2011, Egypt's economy was devastated. Many Egyptians returned from Libya, Syria, and other Gulf countries which increased the unemployment rate in the country. The unemployment rate jumped from 8.9% in 2010 to 12.8% in 2015 (CAPMAS, 2015). Therefore, the risk of further unemployment rings the bell for the government to strengthen the role of SMEs and pave the way for them to grow. Thus, it becomes clearer that SMEs growth will reduce this problem and improve the Egyptian economy.

1.2 Importance of Small and Medium-Sized Enterprises (SMEs)

The success of firms such as Apple, Microsoft, and Dell companies had attracted scholars to study the behaviour and growth determinants of small firms. Those firms grew steadily while expanding globally and became one of the most successful innovative firms generating profits, creating job opportunities, and playing a major part in economic development. The success of such firms attracted policy makers to encourage and promote SMEs growth and try to provide programmes facilitating their growth. In the UK, many programmes were offered to support and sustain growth among SMEs which was successful in moving employment to start-up high-growth firms (Roper and Hart, 2013). Thus, researchers and academics are attracted to study the behaviour and determinants of growth in SMEs with recent studies focusing on internal and external enablers (Love and Roper, 2015; Colombelli, 2015; Love et al., 2015; Obeng et al., 2014; Davidsson et al., 2005).

Moreover, small businesses are regarded as the engine for any economic development in both developed and developing countries, they contribute to growth, exporting, and innovation (Love

and Roper, 2015). Previous empirical studies regarding the impact of SMEs on the economy were supported by the work of Reynolds (2007) and Karadeniz and Gocer (2007). However, despite the significant role SMEs play in the economic development and global market, very limited work had been undertaken to examine the impact of innovation and exporting as determinants of SMEs growth in emerging countries, specifically in Egypt. The importance of exporting lies in its strategy for reaching the international market; while innovation as the main source of competitive advantages and a strategy for survival (Roper and Xia, 2014a). Past studies were interested in large firm internationalisation and innovation capabilities disregarding the importance of SMEs contribution to both internationalisation and innovation. The reason for that was based on Schumpeter (1942) work which fostered the importance of large firms and considered them as the most powerful engine of progress. In the United State, the shift from large firms to small ones was due to increase in labour supply and changes in consumers' needs and tastes (Brock and Evans, 1989). This was the starting point to realise the importance of SMEs to the economy. It was found that SMEs create job opportunities; contribute positively to Gross Domestic Product (GDP); target niche markets that are profitable; adapt to market changes quickly; provide support to large scale firms; encourage and attract skilled workers; improve forward and backward linkages between different sectors, and ability to innovate (Tolentino, 2000; Hallberg, 2000).

In economic literature, Audretsch (2002) described the dynamic view of SMEs and their impact on the efficiency of the economy. The dynamic view, which is relevant to the theories of small firm evolution, pointed out the important role small firm play in creating job opportunities, their unique challenge in innovation and competition in global markets (Roach, 2010). A stream of literature studying the importance of small firms to economies highlighted their ability to reduce poverty and act as an equilibrium function in the market for competitive level by restoring the price and profit level (Karadeniz and Gocer, 2007, Audretsch, 2002). Small firms equilibrated the market by providing more of it and their expansion rate was found to be greater than larger ones as well as the net employment gain (Audretsch, 2002). They are not only regarded as a replica of a larger one but act as "agent of change" through innovative activity, although there is a low investment in R&D (Audretsch, 2002).

In conclusion, firm growth has attracted much interest and attention to investigating and examine how and why firms grow (McKelvie and Wiklund, 2010; Wright and Sligliani, 2012). It is considered as a heterogeneous and complex construct (Leich et al., 2010). However, studies on SMEs growth are no longer short in supply in developed countries but, there is a need to study their growth in developing economies. The importance of the thesis is that what might be

applicable to developed countries may not be equally applicable in emerging economies. The access to resources, new ideas, technologies, and opportunities might not be the same which affect their growth behaviour (Phan and Foo, 2004). Furthermore, SMEs are considered to be a catalyst for economic growth, a mean for transferring knowledge and technology that lead to improvement in the quality of life (McMullen and Warnick, 2015; Audretsch, 2002; Bridge et al., 2003; Chamanski and Waago, 2003). They are expected to bring innovation to the market (Kazem and Heijden, 2006) and strengthen the industrial base in both developed and developing countries. Thus, growth depends on substantive growth capabilities which facilitate firm competition (Lockett et al., 2013). While SMEs are a source of innovation, they are more likely to export, which raise the question about the direction of causality (Ganotakis and Love, 2011; Love and Mansury, 2009). The ability of firms to export has gained attention (Gashi et al., 2014; Esteve-Perez and Rodriguez, 2013, cited in Love et al., 2015) and considered to be a source of innovation and growth to the firm (Love and Roper, 2015; Damijan and Kostevc, 2015; Halilem et al., 2014). Therefore, SMEs exporting and innovation is important for their growth and needs more investigation across different countries and industries.

Given the importance of SMEs growth to the economy (Anyadike-Danes et al., 2009), it is important to study its determinants. In Europe, SMEs play an important role in the economy and represent 99.8% of all enterprises while, firms provide employment for more than 70 million people in the European Union (Watson, 2001). Not only do the majority of SMEs constitute a large percentage of the European business, New Zealand reported that 97% of businesses are SMEs (Beaver and Price, 2004) while Canada reported 90%, Sweden 98%, and the UK over 99%. In the UK, it was found that high growth SMEs represent less than 1% of firms, however, they are able to generate 20% of job growth (Anyadike-Danes and Hart, 2015). As a result, it could be found that the development of SMEs has been one of the major planks of economic development. Therefore, the determinants of growth in small firms still remain an important area to research as it might differ from country to another.

Due to SMEs importance, recent studies addressed the external and internal factors affecting growth. Evidence found that skills, leadership, and people management affect innovation and exporting SMEs activities (Love and Roper, 2015; Zahra et al., 2009) others found entrepreneurial characteristics (Colombelli, 2015; Baum and Locke, 2004; Baum et al., 2001; Robson et al., 2012) while evidence found education and experience play an important role in growth (Davidsson and Honig, 2003; Politis, 2005). Furthermore, studies examining the growth of firms highlighted the importance of studying the cognitive decision process (Wright and Stigliani, 2012). The importance of developing capabilities and resources is important in

changing growth strategies over time which leads to the shift from 'exploring skills' to 'exploitation skill' (Wright and Stigliani, 2012). While earlier studies focused on firms and owner characteristics and business strategies as factors affecting firm growth (Bridge et al., 2003; Storey, 1994; Barkham et al., 1996). Moreover, recent studies highlighted the importance of the relationship between growth, innovation, and exporting (Love and Roper, 2015; Boermans and Roelfsema, 2015a); Entrepreneurial leaderships, capabilities, and growth (Lockett et al., 2013); entrepreneurial characteristics and innovation (Robson et al., 2012); exporting and innovation (Higon and Driffield, 2010; Nguyen et al., 2008; Beveren and Vandenbussche, 2010); innovation, growth, and performance (Freel and Robson, 2004); firm characteristics and exporting propensity (Lefebvre and Lefebvre, 2001); human capital and exporting (Ganotakis and Love, 2012; Robson et al., 2011); human capital, innovation, and growth (McGuirk et al., 2015); entrepreneurship and growth (Wright and Stigliani, 2012); experience, age, and exporting performance (Love et al., 2015); as a result growth is considered as a complex construct (Leitch et al., 2010). Upon close review, most of the previous studies tend to focus on developed countries disregarding the importance of growth for developing countries.

1.3 Small and Medium-sized Enterprises in Egypt

Each country comes from a different economic, cultural, and social background. Egypt's population which, according to Central Agency for Public Mobilisation and Statistics (CAPMAS), is estimated to be 90 million in 2015 and additional 8 million as expats abroad, which continues to place a burden on limited resources. Although Egypt is doing well in improving certain social indicators, it needs to focus more on the economic level. A study by World Bank shows 23% of the Egyptian population is living below poverty level (UNDP, 2014) which makes it more challenging to improve the economic situation of the country.

While Egypt is headed towards a major financial and economic crisis after the 25th January revolution in 2011 and the 30th June 2013, the importance of small firms is crucial for economic recovery and the creation of job opportunities. In Egypt, the micro, small medium-sized enterprises (MSMEs) account for 95% of active enterprises and contributing to over 80% of GDP and 75% of total employment (OECD, 2010, cited in Stevenson, 2010). It was found that 99% of the non-agricultural companies are M/SMEs representing 80% of the private sector and 66% of the labour (IDRC, 2009). The number of MSMEs in Egypt is around 2.34 million firms and in total of 4.3 million including all informal ones (Stevenson, 2010). Egypt's annual labour force growth between the year 2005-2010 was 2.5%, annual labour force entrants around 640 thousand and job availability of 450 thousand creating an annual deficit of 190 thousand (Stevenson, 2010).

Given the importance of small firms, the need to develop mores studies is needed to foster their role in the Egyptian economy. In Egypt, SMEs are defined under the law 141/2004 of Social Fund for Development (SFD) as those who employ 50 and less with an in-paid capital of EGP 1 million, which was employed in this study.

1.4 The Importance of the Study

Given the importance of small firms in creating more job opportunities and boosting the economy, studying the factors affecting their growth in Egypt will be of great importance. The core of the study will not focus on the qualitative characteristics of managers as studied earlier in literature, but rather on the most important factor that researchers argued about “innovation” (Schumpeter, 1934) and “exporting” activities (Love and Roper, 2015; Pham, 2015; Golovko and Valentini, 2011) which are considered as the two major sources of firm growth (Prashantham, 2008; Vila and Kuster, 2007, cited in Halilem et al., 2014). Exporting has been a cornerstone of the Egyptian economy and plays an important role in improving trade balance while regarded as a key factor helping economies to recover from a recession and stimulate growth. The practical relevance of the subject lies on the hand, in the high importance of studying the direction of innovative small firms towards exporting and growth especially during recessions. Secondly, the research will contribute to the literature of small firms in a new emerging economy, Egypt, thus, will help in future comparative studies. Moreover, Egypt suffers from the ‘missing middle’; thus studying the determinants of growth in SMEs is of great contribution to the economy especially after the turmoil as a result of the revolution.

Most low- and middle- income countries suffer from the so-called ‘missing middle’ which is characterised by having many small firms but, few medium-sized and large firms. The importance of having medium- and larger-sized firms lies in their ability to provide better-trained people, higher wages, better quality of goods and services, higher productivity, high investment in R&D, more innovation, and ability to engage in export activities (Altenburg and Eckhardt, 2006). High productivity is a result of producing goods and services with more productive employees which are sold at a lower price leading to higher wages.

In summary, the importance of studying Egyptian SMEs is of great contribution to the literature for the following reasons:

- Egypt's economy was devastated after the 'Arab Spring' revolution that affected the whole MENA region in 2011. Therefore, by studying this case, it will fill the gap in the empirical literature for the MENA region as they share similar characteristics.

- After the revolution, larger firms are downsizing thus, the need to absorb those unemployed people becomes a burden on the economy. Small firms are regarded to be the answer to this problem as one of their advantages is to create more job opportunities.

- Egypt is a typical example of the middle-income economy suffering from 'missing middle'. More than 90% of Egyptian firms are MSMEs which reflects their difficulty in growing into large firms. Therefore, there is a need to study the determinants of growth in SMEs.

- Although Egypt enjoys a favourable location, in the heart of three continents, and has a large domestic market, rich in natural condition such as the wind and solar energy in addition to the external income from Suez canal and tourism; it suffers from trade deficit, high employment rate, highly concentrated exports, and low level of productivity.

- After the inauguration of the Suez Canal expansion in 2015, the need to attract SMEs and build logistics areas becomes the only hope for boosting the Egyptian economy. It will act as a game changer for future global trade.

- The scarcity of research on Egypt makes this study of great importance by studying factor-driven economies compared to innovative-driven economies.

- As the majority of studies focused on developed countries, Egypt is one of the emerging countries and its importance in the world is growing which will contribute to the stream of literature. It is a new context to study and will enable future comparative studies.

In response to the above gaps, empirical findings of this study contribute to the emerging disciplines of entrepreneurship, management, marketing, and international business that examine the determinants of growth in Egyptian SMEs focusing on the role of innovation and exporting activities. Moreover, the research will seek to examine innovation as an antecedent factor affecting exporting in Egyptian small firms.

1.5 Research Aim and Objectives

The aim of this research is to develop an explanatory framework that helps in understanding and examining the determinants of growth in the Egyptian SMEs focusing on the role of exporting and innovation activities. On a more specific note, the objectives of this research are to:

1. Examine the determinants of SMEs growth with respect to the role of exporting and innovation activities;
2. Examine the impact of SMEs innovativeness on their exporting activities;
3. Suggest productive direction for future research on emerging countries such as the Egyptian SMEs;
4. Provide recommendation for policy makers and business practitioners on the importance of innovation and exporting on SMEs growth in the Egyptian context.

1.6 Research Questions and Hypotheses

There is a consensus that exporting and innovation activities have a crucial impact on firm growth, however, there is a scarcity of research on SMEs in emerging countries. The overwhelming majority of studies have been conducted in developed countries. Thus, this research is designed to examine the Egyptian SMEs innovation and exporting activities. The general question for this research is to "examine the determinants of growth in SMEs from the innovation and exporting activities perspectives in the Egyptian SMEs". Three specific questions and hypotheses then follow:

RQ1: What impact does exporting SMEs have on the growth of firms in Egypt?

H1: Exporting activities significantly affect SMEs growth positively.

RQ2: What impact does innovating SMEs have on the growth of firms in Egypt?

H2: Innovation activities significantly affect SMEs growth positively.

RQ3: What impact does innovation activities in SMEs have on their exporting activities?

H3: Innovation activities significantly affect exporting activities in SMEs positively.

1.7 Research Methodology

In order to achieve the aim and objectives of the research, the study employs a positivist stance which offers an opportunity to examine the determinants of growth in small firms focusing on two

major growth strategies, exporting and innovation activities; while examining the effect of innovation on firm exporting activities. The positivism philosophy uses the quantitative methods to test the hypothetical deductive generalisation methodology. The methodology used in the study is based on the theoretical framework for SMEs growth, exporting, and innovation. The research methodology entailed primary data gathering in Egypt's industry. In essence, the research used a detailed questionnaire to test the hypotheses. The pre-test was used to improve the reliability of research and collect early warning on questions to be modified before distribution. A representative sample of sufficient size was selected for generalisation (406 firms). Moreover, ethical issues concerning conducting the research were addressed.

The analysis used to answer the research hypotheses were divided into two sections. For the first two hypotheses, the dependent variable was continuous thus; multiple-linear regression analysis was used to examine the effect of both exporting and innovation activities on firm growth in Egypt. Taking into consideration the problem of heteroskedasticity a transformation for the percentage was made using the logarithms 'Ln' to overcome this problem. Six models were developed to build the model and examine the amount of variation explained by the regression model and its significance. As for the third hypothesis, probit regression analysis was used as the dependent variable was dichotomous. Meanwhile, the study tested for endogeneity between innovation and exporting where no endogeneity was found. However, the study took into consideration the problem of endogeneity and performed instrumental variable for robustness. The main idea of the instrumental variable is to find variables that are highly correlated with innovation but not with the error term; however, same results were obtained.

1.8 Egypt: A Profile of an Emerging Market

Egypt, commonly known as "The Motherland of the World", "Land of Civilizations", has a uniquely strategic location, in north-eastern Africa , joining the three continents of Asia, Africa and Europe. It is considered to be a huge market for any investor as it has a population of nearly 90 million people increasing annually at a growth rate of 2% (CAMPAS, 2015). Egypt has been undergoing major economic and structural reforms since 1991; it moved from centralised to a market-oriented economy. In July 2004, the new government aimed at accelerating trade and broadening economic and structural reforms. By 2005, the government succeeded in different areas such as tax reform, management of public finance, monetary policy, privatisation, and restructuring of the financial sector (SIS, 2011).

1.8.1 Economy

The Egyptian economy is the second largest in the Arab world after Saudi Arabia. According to a report done by the Central Intelligent Agency (CIA, 2015), Egypt real growth rate (GDP) was estimated to be 2.2% in 2014 compared to 2.1% in 2013, and 2.2% in 2012 and ranked 141 out of 222 to the world. It was estimated that FDI (home) is $79 billion in 2014 ranking 50 among the world compared to $76 billion in 2013. In 2014, Egypt exports were estimated to be $27.2 billion while its imports were $55.3 billion creating a deficit of $28.1 billion. The United Kingdom is regarded as the largest foreign investor in Egypt, with 900 UK companies with an investment of £10 billion operates in. Those firms are investing is many sectors such as oil and gas, financial services, textiles, tourism, telecommunications, pharmaceuticals, and other consuming goods (CAPMAS, 2015). On the export level, UK's exports to Egypt was estimated to be £945 million in 2009; exporting fruits and vegetables, power generating machinery, industry machines, petroleum and its products. On the other hand, Egypt exports to the UK researched 7% to be £656 million; exporting fruits and vegetables, clothing accessories, fertilisers, natural and manufactured gas, petroleum and related materials (EconomyWatch, 2010).

Moreover, the Egyptian economy was extremely devastated during the period 2011-2013. The 25th January Revolution in 2011 has haemorrhaged about $1 billion a month in foreign currency reserves leading to the decline in the Egyptian pound (SIS, 2011). It declined from $36 billion to $28 billion. The Egyptian economy is at risk as economic growth has fallen to between 1-2% during that period, poverty rate at 23%. Moreover, the Egyptian foreign debt is estimated to be around $38 billion while, its budget deficit is $26.5 billion. According to Mansour, Egypt's interim president, the unemployment rate reached 13.4% in the period between July 2013 and January 2014 reaching to 12.8% in 2015 (Figure 1.1).

Figure 1.1: Egypt Unemployment Rate (2011-2015)

Even worst, the tourism industry that pumps $15 billion to the Egyptian economy was affected greatly by the recent violence that happened in Egypt (Economy, 2013). Tourism is considered to be one of the main sources of foreign currency for Egypt. It provides about 7% of GDP and employs 12% of the population. Nevertheless, the inflation during this period exceeded 13% which affected the living standard for individually greatly. On the other hand, foreign investors suspended their operation for several months like General Motor and others. Factories and workshops were affected by the interruptions of gasoline and daily protests. These protests had affected the productivity of factories sharply and many large firms had no other option but to downsize to overcome their costs. As a result, the country suffered from a trade deficit and according to the World Bank report (2015), the annual growth rate of Egyptian exports of goods and services in 2011, 2012 and 2013 were 3.74%, -4.65% and 4.12% respectively.

As a result, the importance of SMEs in helping and promoting economic growth is vital. The ability of small firms to absorb the unemployment and create job opportunities play an important role in overcoming crises. Moreover, those firms that engage in the international market provide a foreign currency to the country and thus, support the economy. From the above reports and statistics, the importance to foster the internationalisation among firms is vital for economic growth.

1.8.2 Population

With a population of around 90 million in 2015, Egypt's literacy rate (66%) is below the Middle East and North Africa (MENA) regional average (77%) and the lowest in the world for a mid-income economy (Stevenson, 2010). The failure of the educational systems, the growth of unemployed youth (12.8 % in 2015), and poor financial and economic system highlights the important role of small and medium-sized enterprise in the economy. Without having educated and skilled workforce who are innovative and can link the science with education, Egypt's competitiveness will erode in the long run. If achieved, this would meet the need to create jobs for Egypt's fast-growing and youthful population, while allowing for the gradual reduction of the debt burden.

1.9 Contribution of the Study

This thesis seeks to add to the theoretical and empirical foundation of innovation, internationalisation, and growth theories. It empirically tests the determinants of small and medium-sized firms with respect to exporting and innovation activities in the Egyptian context.

Furthermore, it will examine the effect of innovativeness on SMEs exporting activities. Specifically, the anticipated contributions of this study include:

1. Understands exporting and innovation activities of SMEs in Egypt.

2. It will examine the significant effect of Egyptian SMEs innovation and export activities on firm growth.

3. It will examine the significant effect of innovation in Egyptian SMEs on their exporting activities.

4. The data are drawn from a survey of entrepreneurs in Egypt and therefore, the results extend knowledge about small firm growth, innovation, and exporting in emerging countries. It will provide a dataset for future research on the Egyptian SMEs as there is scarcity of research on Egypt.

5. Egypt suffers from 'missing middle', thus examining the determinants of growth in SMEs will be of great contribution.

6. Empirical support for the theories of innovation, internationalisation, and growth. It examines theories of small firm growth, innovation, and internationalisation.

7. It will contribute to the gap between the need to develop more research on emerging countries and the need for more cross- country studies.

8. Examine the growth of SMEs during recessions and economic instability period.

Given the important role that SMEs play in the economy of developed and developing countries, governments and policy makers might use the findings from this research to create or modify rules and regulations that enhance both the innovation and international competitiveness of small firms. As was the case for innovative managers, government, and policymakers need new tools to measure and perhaps influence the innovation process and these have not yet been developed. Furthermore, the attempts to direct or enhance innovation must be based on an accurate understanding of the importance of innovation to the firm and how it acts as a catalyst for internationalisation activities. Policymakers will be responsible for designing and implementing export promotion for small firms and provide recommendation to enhance them.

1.10 Limitation of the Study

There are many possible limitations that can face researchers while doing their work which will be discussed in details in chapter 7. These are the parameters that are not controlled by the researcher when undertaking the research.

1. The first limitation is the limited availability and poor quality of data that limits the effectiveness of the research. Therefore, the study will rely on data from the governmental sources, due to their reliable and accurate dataset.

2. Given the study is across different sectors and industries; it does not explore any single industry in depth.

3. The cross-sectional method used in studying the sample will not enable the research to study any changes happened to the firm through successive years (unlike the longitudinal method).

4. The inconsistency in the classification and definition of SMEs across different institutions, authorities, and ministries makes it difficult and can impact the robustness of the results. In order to overcome these problems a consistent definition and only incorporated dataset which meet the criteria was utilised.

5. There is a high number of SMEs that are operating in the informal sector and cannot be monitored or tracked due to lack of statistics and data.

6. Lack of dataset regarding innovation activities of SMEs in Egypt thus, a whole section was added in the questionnaire to capture this activity.

1.11 Organisation of the Thesis

This thesis first addresses the background relevant literature on the internationalisation, innovation, and growth of small firms. Second, the research design and methodology are discussed. Third, research findings are presented then followed by analyses of the findings and limitation for the study.

The thesis is composed of seven chapters, divided as follows:

Chapter 1: Introduction

This chapter is introductory to the main importance and contribution of SMEs to the economy. It explains the background and context of the research while developing the research objectives,

questions, and the hypotheses of the study. A general overview of the economic background in Egypt and a brief introduction to the role of SMEs in Egyptian economy are introduced.

Chapter 2: Determinants of SMEs Growth

This chapter will address the importance of SMEs to the economy. Moreover, it will interpret the growth indicators and measurement utilised in the study. The chapter then will discuss the determinants of firm growth reviewed in the literature identifying the main factors for developing the proposed research model. In addition to that, the determinants of exporting and innovation will be discussed to better understand the factors affecting both activities.

Chapter 3: The Role of Exporting and Innovation Activities on SMEs Growth

This chapter will discuss the role of exporting and innovation activities on firm growth. The first section will present a literature review of the main definitions, theories, and models regarding the internationalisation of firms, with a particular focus on small firm exporting. The importance of this section is to gain an understanding of the historical development of theories and empirical works provided by scholars.

The next section will specifically discuss the innovation literature and develop the link between innovation, exporting, and growth in small firms. It provides a review of the definitions, types, and theoretical framework approach for the study. The importance of differentiating between what constitute innovation will enable a better understanding of their innovation activities and thus, address the research question.

The third section will address the relationship between innovation and export and the debates emerged regarding the casualty.

The last section will conclude with the proposed research model to address the hypotheses among constructs.

Chapter 4: Research Design and Methodology

It entails a review of the research design, philosophy, and methodology inclusive of the details describing a preliminary survey pre-test, the process of sample selection, data collection procedure, survey items, and scales used. The techniques and method used for hypotheses testing will be described in details. The validity and reliability measures of the research will be

addressed and how important it is to any research. In addition to that ethical issues regarding conducting the study is presented.

Chapter 5: Respondent Characteristics

This chapter offers an overview of the respondent characteristics. It begins with a descriptive analysis of the data collected using 5-number summary, chi-square of independence test, cross-tabulation and probit regression. Profile for exporting and innovation firms will be provided to give an insight on SMEs in Egypt.

Chapter 6: Results and Discussion

Based on the data analysis, this chapter will test the proposed hypotheses. Two methods were used to examine the research hypotheses; multiple regression and probit model. The study took into consideration the endogeneity problem that may arise from examining the effect of innovation on firm exporting; thus, it was controlled for. The chapter then presents the research findings including a discussion of hypotheses testing and a summary of results.

Chapter 7: Conclusion and Recommendation

The final chapter will conclude with a discussion of the thesis findings, contribution to the research, limitation of the study, and any future research direction. The remaining contents will include a bibliography contacting citation for all references noted and appendices that include copies of the survey documents in Arabic and English and innovation-internationalisation review.

1.12 Chapter Summary

The importance of SMEs as an engine of growth and a source of job opportunities develop a need to study their role in emerging countries. As literature has focused mainly on developed countries, the call for studies on developing countries was recommended. Egypt, one of the emerging countries that had faced turbulence in its economy during the ‘Arab Spring’ revolution in 2011, has been of an interesting context. The importance to study the role of small firms during an economic recession will contribute to the stream of literature. SMEs growth has been one of the major planks of the Egyptian economy. Moreover, Egypt is suffering from the ‘missing middle’ which calls for the need to examine the determinants of firm growth to develop policies fostering their role in economy. Reasons for studying the Egyptian context were discussed in this

chapter to contribute to the stream of literature. Then the chapter has explained the role of small firms in the economy and outlined the research aim and objectives.

The next chapter will discuss the importance of firm growth and how it is measured. It will provide a comprehensive review of relevant literature on the determinants of SMEs growth. The chapter reviews the academic and conceptual research studies regarding the determinants of SMEs growth and specifically the role of managerial and firm characteristics. It will provide a review on the role of those characteristics on exporting and innovation activities as well.

Chapter 2: Determinants of Growth in SMEs

2.1 Introduction

The welfare of the society depends on the growth of its industries through expansion and creation of firms which leads to economic prosperity (Goedhuys and Sleuwaegen, 2010; Wiklund et al., 2009). Thus, small firm growth research continues to attract scholars to explore and examine factors affecting its performance and growth. They are considered to be a source of innovation and employment growth and the need to foster their role in the Egyptian economy is important. Growth is one of the most attractive topics that researchers investigate in-depth. The multi-disciplinary nature of the research including economics, strategic management, and psychology makes it difficult to have a unique theory on small and medium-sized firms. Thus, it is regarded as a complex and multidimensional construct which depends on the internal resources of firms (Wright and Stigliani, 2012; Wright and Marlow, 2011). Despite the extensive research studies, growth was measured differently which resulted in a lack of a single theory to describe firm growth (Bridge et al., 2003; Andersson, 2003). There is no research model that fully can explain the growth of firms since there are a lot of factors associated with (Pansiri and Temtime, 2010; Sleuwaegen and Goedhuys, 2002; Carter and Jones, 2000; Dobbas and Hamilton, 2007).

Moreover, there is a lack of agreement regarding factors affecting its growth. A review conducted by Barringer et al. (2005) reviewing 106 books and articles on firm's performance and growth during the period 1997-2003 found that the major areas focused on were the owner characteristics, firm characteristics, business practices, business strategies, and human resource management practice. Furthermore, earlier studies by Storey (1994) examined the effect of firm and owner characteristics, and business strategies on firm growth which was adopted later by Barkham et al. (1996), Bridge et al. (2003) and Obeng et al. (2014). On the other hand, recent studies found that social networks affect entrepreneurs ability to seek opportunities thus, stimulate growth (Hoang and Antoncic, 2003, cited in Roper and Hart, 2013). However, more recent work by the Enterprise Research Centre (ERC) in the UK contributed greatly to the stream of literature regarding the relationship between growth, exporting, and innovation. An overview conducted by Love and Roper (2015) found that high-quality skills positively affect exporting and innovation; R&D positively affect innovation; the success of innovation and export is related to the firms' physical capital investment; all these are examples of internal enablers. As for the external enablers, links between small firms positively affects

innovation and exporting activities. Moreover, they found a strong positive relationship between innovation, exporting, and growth/productivity. While a study done by Colombelli (2015) on a panel of 665 firms found that human capital and firm characteristics are important in determining firm growth. Furthermore, Lockett et al. (2013) found that SMEs growth depends on substantive growth capabilities such as entrepreneurial leadership. Meanwhile, a study on a sample of US, UK, France, and Germany suggest that absorptive capacity plays an important role in determining firm growth (Roper and Xia, 2014b). Moreover, integrating and exploiting new knowledge and capabilities were found to affect firm performance and growth (Hayton and Macchitella, 2013). In addition to that, Bourke and Roper (2015) found that quality improvement and innovation are central for firm internationalisation and that firm adoption of quality improvement methods (QIMs) affect firm's innovation performance.

Despite, the importance of SMEs and their role in innovation and exporting activities, there is a lack of studies explaining the relationship between growth, exporting, and innovation of SMEs in emerging countries, specifically in Egypt. Hence, an examination of the determinants of firm growth with respect to innovation and exporting activities will provide a significant implication for designing relevant policy. Roper and Hart (2013) suggested that without the intervention of government role in supporting SMEs, this will affect firms' formation negatively. They suggested that to increase entrepreneurial activity, the government has to lower the risk and cost for entrepreneurs, lend SMEs, help them in implementing new technologies, and provide them with marketing and export information. There is a need to support an entrepreneurial culture which was found to affect the entrepreneurial intention to start a business (Moriano et al. 2012, cited in Hayton, 2014). However, there is a lack of data regarding the determinants of growth in Egypt and how government can intervene to support them. Moreover, Egypt is suffering from the 'missing middle' phenomenon which calls for studying factors affecting small firm growth. Given the importance of exporting and innovation in firm growth (Love and Roper, 2015; Golovko and Valentini, 2011; Palangkaraya, 2012; Ganotakis and Love, 2011; Halilem et al., 2014; Damijan and Kistevc, 2015; Monreal- Pérez et al., 2012) this study will focus on those two constructs.

The study will provide a review of the foundation literature on constructs relevant in designing the research model. It will provide a review on the determinants of growth in small firms; while, adding to the stream of literature two major sources of growth namely exporting and innovation which will provide significant contribution to literature (Lööf et al., 2015; Boermans and Roelfsema, 2015; Zucchella and Siano, 2014; Prashantham, 2008; Vila and Kuster, 2007, cited in Hililem et al., 2014). Moreover, to ensure the present study is based on a solid theoretical

foundation with relevance to previous studies, the research framework is derived from a review of the theoretical perspective on small firm growth. Furthermore, the chapter will review the contribution of literature relating to how a range of internal factors such as firm and manager characteristics influence small firm growth while adding exporting and innovation activities to the model.

2.2 Small and Medium-Sized Firm Growth

Staley and Morse (1965) were the first researchers to highlight the importance of small and medium-sized firms (SMEs) on the economic development. Since then, many studies have been attracted to determine the contribution of SMEs to economic development especially, their role in job creation (Wright and Marlow, 2011). It was posited that small firms account for 50% of GDP in most economies both in developed and developing countries (Evanson, 1995) and a positive relationship was found between small firms and economic development (Baldwin and Picot, 1995; Evanson, 1995; Birch, 1979; Storey, 1994). On the other hand, small firms were claimed to have an impact on new job creation (Ayyagari, et al., 2011; Barkham et al., 1996; Storey, 1994). A research conducted in America during the 1970's by Birch (1979) found that 8 out of 10 jobs were created by firms with fewer than 100 employees. However, Dunne et al. (1989) criticised Birch work as many jobs that were created were quickly destroyed due to high failure rate. The average lifecycle of SMEs was found to be around five years which means that high percentages fail within five years (Jones, 2009). The main reason for not surviving depends on many challenges and problems that hinder their performance. Thus, for SMEs to survive they have to react to changes and continue to innovate for growth; since their size advantage enable them to adapt quickly to changes in the market (Smith and Smith, 2007). So, if they are not able to control the market, at least they are able to respond quickly to customers and develop a relationship (Hudson and Smith, 2007). However, empirical evidence supports the argument that only a few small businesses do grow and account for the majority of small firms' employment contributions (Bridge et al., 2003, Baldwin et al., 2001; Orser et al*.,* 2000; Storey 1994). A recent study conducted by Anyadike-Danes and Hart (2015) found that high-growth firms represent less than 1% of established firms however, it provides 20% of job growth.

Much attention over the last two decades has been paid to small firms and their growth for a number of reasons. It has been found that SMEs play a vital role in the economic development as they are the main source of employment (McMullen and Warnick, 2015; Wright and Stigliani, 2012; Barnes and Haskel 2002). They have potential contribution to the improvement of income

distribution, poverty reduction, industrial development, employment creation, export growth, and improved quality of life (McMullen and Warnick, 2015; Andersson, 2003; Dobbs and Hamilton, 2007). Meanwhile, small firms are considered as an agent of change through innovative activity and a channel for transferring knowledge and technology (Audretsch, 2001; Bridge et al., 2003). Thus, improving the country's competitive position through an increase in the effectiveness and level of innovativeness will positively affect the domestic economy (Chamanski and Waago, 2003).

In conclusion, the extensive literature had highlighted the importance of SMEs to the economy as they create new jobs, foster innovation, provide new products and services, provide a source of competition to larger firms, and their managers are flexible and able to respond quickly to any change in the environment. Therefore, for boosting the Egyptian economy after the recession and encouraging small firms to grow, there is a need to examine SMEs growth.

2.3 Measures of Small Firm Growth

Growth is considered to be a descriptor indicator for measuring firm's performance. To date, there is no general agreement on how to measure growth in small firms. As a result, this might affect the development of a single theory. A range of measurements was presented in Bridge et al. (2003) work in measuring growth. There are financial and non-financial indicators which will be discussed in details in the next section. Examples of growth measurements include: profit, employment, number of customers, exports/imports, new product/service and value added (Bridge et al., 2003; Jantunen et al., 2005).

2.3.1 Growth Indicators

To measure small firm growth, researchers used different measurements such as general objective and subjective indicators. The general objective measures are the most frequently used in research which includes sales, employment, assets, physical output, market share, and profits (Bridge et al., 2003; Delmar et al., 2003; Shephred and Wiklund, 2009). On the other hand, the subjective measurement uses the scale to identify the individual's satisfaction with growth outcomes. However, this may cause bias as individuals differ in their level of satisfaction thus, considered as an inappropriate tool (Chandler and Hanks, 1993).

Moreover, there are different financial indicators for measuring firm growth such as profit which is considered to be a weak indicator and managers are reluctant to disclose such data (Barkham

et al., 1996; Roper, 1999). The disadvantage of using this indicator is its failure to reflect the real position of firm growth. For example, a firm might not achieve profit, however; it is investing in the firm (Barkham et al., 1996). Moreover, the use of profit indicator may bias the results as small firms could reflect different financial statements to avoid tax and therefore, not reflecting the actual performance of the firm. Furthermore, little evidence was found regarding the association between small firm growth and profitability (Shepherd and Wiklund, 2009; Dobbs and Hamilton, 2007). On the other hand, there is the market share indicator which measures how much a firm has grown in relation to its competitors. However, this indicator is criticised by Davidsson et al. (2006), especially in small firms. The weakness of such indicator is due to the way it is calculated which might cause bias. The difference in market share compared to other firms in different markets could be irrelevant (Davidsson et al., 2006). Therefore, it should only be compared to industries offering the same product (Delmar et al., 2003). Another financial indicator utilised to capture the growth in firms is sales, which is commonly used (Delmar et al., 2003) because it is easily accessible and insensitive to capital intensity. Although, previous studies considered it as an appropriate tool to capture firm growth, it may be sensitive to inflation and currency rates (Barkham et al., 1996; Davidsson and Wiklund, 2000; Delmar et al., 2003) since it might cover several countries and time period.

Although many authors used the financial indicators to measure firm growth, non-financial indicators were recommended and are commonly used (Delmar et al., 2003; Shephred and Wiklund, 2009; Kirkwood, 2009; Bridge et al., 2003; Davidsson and Wiklund, 2000; Barkham et al., 1996). The non-financial indicator such as employment growth is more common because it is easier to collect and reliable (McKelvie and Wiklund, 2010; Blackburn et al., 2009; Storey, 1994) It is measured by calculating the difference between employment changes.

In summary, the most common indicators that were used to measure growth are employment and sales. For owners, both measurements could be an indicator for firm success since employment growth is considered to be an adequate tool for measuring the size of the firm and growth (McKelvie and Wiklund, 2010; Bridge et al., 2003) while sales is used as a measure of performance. Although the success of firms could be measured more in terms of sales growth (Delmar et al., 2003) the employment measurement is commonly used.

In this study, the main focus is on job creation thus, employment growth is used in order to capture the growth of small firms. The rational for using this indicator is due to its simplicity and

accuracy. Moreover, small firms in Egypt avoid revealing actual sales and consider it confidential to avoid taxation and competition.

2.3.2 Growth Measures

Growth could be calculated using the absolute growth or relative growth. The absolute growth is measured by calculating the difference in firm size from one observation to another. However, the relative growth calculates the relative change in size. It is calculated by dividing the absolute growth by the initial size of the firm. In this study, the relative growth will be used and calculated as follows:

$$Growth_{relative} = (Final\ size\ of\ the\ firm - Initial\ size\ of\ the\ firm) / Initial\ size\ of\ the\ firm \times 100$$

However, a transformation for the percentage was made using the logarithms 'Ln' to avoid any problem with the heteroscedasticity (Barkham et al., 1996).

Although it was recommended to use a multiple measures for capturing the growth of firms (Davidsson and Wiklund, 2000; McKelvie and Wiklund, 2010; Bridge et al., 2003; Storey, 1994; Barkham et al., 1996) such as both financial and non-financial measurements to assess growth of firms, it was difficult to collect such data from SMEs in Egypt. The reason for that is most of the firms are very sensitive in providing financial measurements and only prefer to provide non-financial ones.

In summary, there is no single measure that could be used to capture the multidimensional nature of firm growth. However, the most common measurement that was used is the non-financial indicator such as employment growth. Therefore, this research will adopt employment growth to capture firm growth over a period time (2012-2013). In addition to that, government policy is concerned with job creation (employment growth) which these firms provide as the unemployment rate in Egypt researched to 12.8% in 2015 (CAPMAS, 2015).

2.4 Determinants of Small Firm Growth, Exporting, and Innovation Activities

Growth is the result of exploring opportunities considering firms as a collection of a certain number of resources that provide the means to take advantage and grow (Penrose, 1959). It is a consequence of the change in technology as it allows the firm to produce with more efficient resources thus, reduces cost and allows creation of improved products. In addition to that, it

enables firms to develop a competitive advantage by achieving economies of scale (Ireland et al., 2003, cited in Obeng et al., 2014). On the other hand, due to the importance of SMEs, there is an increasingly ongoing research examining small firm growth since they are found to be successful and provide high-quality products and services (Love and Roper, 2015; Wright and Stigliani, 2012; Littunen and Niittykangas, 2010; Kirkwood, 2009; Andersson, 2003; Kinsella et al., 1994; Storey, 1994; Barkham et al., 1996). They are able to adapt to market changes and respond to customer needs. On the other hand, Birch's work (1989) found that those firms that were successful and performed well were a result of innovative activities and risk-taking characteristics of managers who were well educated and trained.

There are motives and intentions which influence entrepreneurial perception towards growth and it is important to understand those intentions which are divided into intrinsic and extrinsic motives (Cassar, 2007). Some entrepreneurs only focus on a starting business with little intention to seek more opportunities for growth (Andersson, 2003). Therefore, the entrepreneur expectations of firm growth affect its development and strategy (Bruch et al., 2009). On the other hand, those entrepreneurs who have high growth intention will manage to reach higher growth (Davidsson et al., 2010; Morrison et al., 2003). However, many studies have examined the determinants of firm growth from different perspectives (Roper, 1998; Davidsson and Wiklund, 2000; Wiklund et al., 2009; McKelvie and Wiklund, 2010). Penrose (1959) argued that firm growth is a function of resource capabilities of firm and expectations of the owner-manager. The influence of entrepreneur and firm characteristics on the performance and growth of firms are of paramount importance. There are many factors depicted in literature which play an important role in shaping firm growth which was discussed earlier.

Thus, it is important to control for owner characteristics, background experience as well as the firm characteristics in studying the effect of exporting and innovation on firm growth. Many studies emphasised the importance of managerial factors in the growth of firms (Obeng et al., 2014; Bridge et al., 2003; Storey, 1994; Smallbone et al., 1995; Barkham et al., 1996; Roper, 1998; Hart and McGuinness, 2003). In addition to that Barkham et al. (1996) and Kinsella et al. (1994) studied a range of similar internal factors that affect firm growth. Storey (1994) found a positive correlation between age, education, work experience and motive of the owner and firm growth. Moreover, on the firm level, Storey (1994) found a positive correlation between firm age, size, industry sector, legal form and location of the firm with growth in addition to strategic objectives.

Early research in studying small firm growth has been examining thoroughly the internal and external factors affecting the growth of small firms (Obeng et al., 2014; Bridge et al., 2003; Barkham et al., 1996; Storey, 1994; Kinsella et al., 1994). Clearly there are many determinants that play a vital role in the success and growth of firms. Thus, successful entrepreneurs are undoubtedly a complex phenomenon. In a comprehensive review of small firm growth literature Storey (1994) had developed a broad view regarding the internal factors affecting firm growth. He found that small firm growth is affected by three components namely:

1. Entrepreneur characteristics,
2. Firm characteristics,
3. Management strategy associated with growth.

Storey (1994) framework stressed the importance of combining those three factors to achieve firm growth as they are not mutually exclusive. Within each component, there are set of factors that were found to affect firm growth. Moreover, Kinsella et al. (1994) work on fast-growing small firms in Northern Ireland and Republic Ireland aimed at investigating the same three internal factors namely firm characteristics; manager characteristics; and firm strategy impact on firm growth.

Internal determinants such as entrepreneurial characteristics, personal traits, and their background in addition to firm characteristics such as age, size, industry, and type of ownership are important determinants of growth. Storey (1994) found that with regards to the firm features: firm age, size, legal form, location, and industry sector are positively related to small firm growth. His work provided useful analyses of the determinants of small firm growth. However, one of the limitations of Storey (1994) work is that the comparative studies of all three factors have an impact on each other for achieving growth. Thus, he recommended investigating these factors interaction together in order to better understand firm growth. On the other hand, Barkham et al. (1996) analysed the determinants of growth of managers and firms characteristics using Storey (1994) framework. They studied small firms in four different regions, Northern Ireland, Leicestershire, Hertfordshire and Wearside for the period 1986- 1990. In their work, growth was measured in terms of employment and turnover growth. The sample was divided into different growth categories depending on the growth level. They divided employment growth into fast-growing firms, which have 100% employment growth, medium growth 1-99% employment growth and finally static or declining firms who had zero or negative employment growth. Similar findings compared to Storey (1994) were found where manager age, education, motives, and industry were found to play an important role in firm growth. As for the business strategy, it was

found that those who had 'incremental product improvement' as a business strategy had higher growth level which reflects the importance of innovation in promoting growth in firms.

On the other hand, previous work had studied the importance of firm and owner characteristics on exporting activities in small firms. A study done on a small software firm found that owner characteristics were more important than firm characteristics in early stage (Kundu and Katz, 2003). However, as it grows, the importance of the firm characteristic becomes more vital. Moreover, Ibeth (2003) found that firm and owner characteristics play an important role in the success of export activities in SMEs. While Fischer and Reuber (2003) and Riddle and Gillespie (2003) works highlighted the importance of owner characteristics in SMEs exporting activities. Moreover, Westhead et al. (2001) found that resources, network, management know-how, and information significantly affect their exporting behaviour.

Moreover, studies had tackled the determinants of innovation using different factors and measurements. Of all types of innovation, product innovation is considered to be the most frequent researched type. It was found that firm and owner characteristics significantly affect innovation activities in small firms (Schreyer, 2000; Davidsson et al., 2002). A review of literature investigated different determinants of innovation is presented in Appendix 1.3.

Given the importance of firm and owner characteristics in firm growth, exporting, and innovation, a review on the determinant of firm growth in small firms will be presented focusing on innovation and exporting activities. The next section will provide a set of determinants that previous studies have proved to be affecting firm growth.

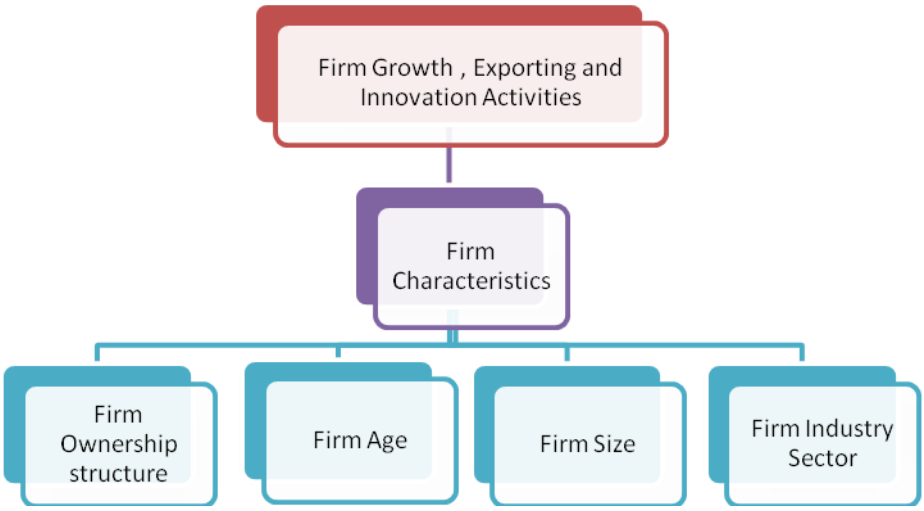
2.4.1 Firm Characteristics

Firm characteristics are important in understanding growth, export, and innovation behaviour of small firms (Smallbone and Wyer, 2000; Bridge et al., 2003; Hart and McGuiness, 2003). It has been widely researched and found to influence small firm growth (Bridge et al., 2003; Hart and McGuiness, 2003; Storey, 1994; Barkham et al., 1996). The ability of a firm to grow is dependent on its internal resources (Penrose, 1959) which were supported by Calvo (2006) and Biesebroeck (2005) work. It includes firm age, size, location, legal forms, sector, and ownership. While some factors depend on the owner decision such as location, legal form, and ownership; others refer to firm characteristics such as age and size. On the other hand, the ability to export and succeed in a foreign country is a function of internal capabilities of firms (Autio et al., 2000;

Zahra et al., 2000). Moreover, innovation has been explored in relation to the internal resources of firms. Nevertheless, firms are regarded as a set of heterogeneous resources and their competitive advantage is derived from the accumulation of human, physical, financial, and technological resources into processes, knowledge, and skills (Wernerfelt, 1984).

Given the importance of firm characteristics in shaping the behaviour of firms regarding its growth, exporting, and innovation, this section will discuss these factors namely: ownership structure, age, size, and industry/sector. Figure 2.1 illustrates the determinants of growth, exporting, and innovation- with regards to firm characteristics.

Figure 2.1- The Determinants of Growth, Exporting, and Innovation Activities - Firm Characteristics



2.4.1.1 Firm Ownership Structure

Few studies have focused on the effect of ownership structure on growth, exporting, and innovation activities. There are many forms in which firms may be established such as sole proprietorship, partnership, and limited liability firms; each form has its advantages and disadvantages. Studies found that limited companies are more likely to experience significant growth rate than other forms (Davidsson et al., 2002; Rosa and Scott, 1999). Firms operating under this structure take more risk since their belonging are secured; therefore, they are encouraged to grow. On the other hand, the advantage of partnership form is its ability to pool

resources, skills, and experience which facilitates growth. However, the partnership may cause conflicts while sole proprietorship is at a disadvantage due to the limited resources they face.

2.4.1.2 Firm Age

Firm age has been widely studied and used as an indicator of firm growth in previous research. Age, measured by the number of years from the birth of firms to the time of the survey, is regarded as an important factor affecting growth. There is a debate about the relationship between firm age and growth. Normally, firm age is suggested to have a positive relationship due to the learning model and experience introduced by Jovanovic (1982). Older firms were found to benefit from their experience and operation which is considered as accumulated resources. They benefit from economies of scale resources, reputation, efficiencies knowledge, and skills accumulated through their years (Heshmati, 2001; Das, 1995). However, many studies have found a negative relationship (Davidsson et al., 2002; Andersson, 2003; Cabral and Mata, 2003; Storey 1994; Evans, 1987). This relationship suggests that younger firms are more likely to grow than older firms. It was found that younger firms in the UK and the USA grow faster than older ones (Storey, 1994; Davidsson et al., 2002) as small firms try to grow quickly in order to achieve minimum efficient scale (Storey, 1994; Davidsson and Wiklund, 2000; Barkham et al., 1996). Once this is achieved the firm will grow slowly afterwards. Another reason for this negative relation is due to the lack of motivation to grow the business for older firms. These mixed results on the effect of age on firm growth need more development. It might differ from sector to another and from country to another. Thus, the relationship between firm age and growth could be positive or negative.

On the exporting level, the Uppsala model by Johanson and Vahlne (1977) reflects the role of time/age on firm growth as they increase incrementally through time. However, this was challenged by the “born global” phenomena and the “network model”. The firm can export from inception or right after their start which means that age is negatively linked with firm exporting activities. In addition to that, the network model reflects the importance of social network to overcome the lack of resources that affect SMEs growth and hinder their performance. Therefore, firm age is not an adequate measure of its growth rate. According to the resource-based view, older firms accumulate more resources than younger ones (Autio et al., 2000). As a result of this, they are able to build an international basis (Bloodgood et al., 1996, cited in William, 2011) as they are prepared to deal with challenges. On the other hand, the Uppsala model presented by Johanson and Vahlne (1977) showed how firms engage in the international

market in a stepwise manner. During this gradual process, firms acquire more knowledge about the foreign market and learn about it which is known as 'learning-by-doing' (Jovanovic, 1982). Thus, learning is considered to be an important resource for exporting in international markets as they develop more skills, language and understand the culture (William, 2011; Andersson et al., 2004). However, the born global firms (Knight and Cavusgil, 1996; Oviatt and McDougall, 1994) raised questions about its validity (Moen and Servais, 2002) since firms were found to internationalise from inception or shortly after starting their business (Crick, 2009; Knight and Cavusgil, 2004, 2005; McDougall et al., 2003; McDougall and Oviatt, 2000; Moen and Servais, 2002; Mudambi and Zahra, 2007; Oviatt and McDougall, 2005). However, there is a debate on the impact of age on SMEs internationalisation. A study done on Swedish firms found that age was not considered a significant factor in determining SMEs internationalisation (Andersson et al., 2004) while, Brouthers and Nakos (2005) found older firms to be successful in export markets; as older firms accumulate and build more resources compared to younger ones. However, this could be invalid as the network model suggests that SMEs can overcome the lack of resources barriers through networking (Zahra et al., 2004). While Love et al. (2015) found weaker evidence that firm age affect the SMEs international activities negatively.

Regarding the relationship between innovation and age, the initial work regarding the effect of firm age on innovation was tackled in Schumpeter work (1934), *Schumpeter Mark I* (cited in Avermaete et al., 2003). Young firms tend to have innovative ideas and dynamic management which foster their growth. Meanwhile, they achieve growth more rapidly than older firms and their business grow quickly in early years and then start to grow slowly (Davidsson and Wiklund 2000; Storey, 1994; Barkham et al., 1996). This positive relationship between age and innovativeness of firms could be better understood with regards to the stage theories. As firms grow and move along the stage model, they gain more experience, resources, and become innovative. However, studies found a negative impact of age on the innovativeness of firms due to their resistance to change (Hadjimanolis, 2000b).

2.4.1.3 Firm Size

Firm size and age are widely studied together however, both resulted in mixed findings. Firm size is measured by the number of employees while firm growth can be determined by the firm size. For this reason, it is considered to be an important factor which was extensively researched. Studies have found a negative relationship which suggests that small firms are more likely to grow which might be due to the minimum efficient scale while, larger firms have better resources (Biesebroeck, 2005; Frazer, 2005; Ropper, 1999, cited in Obeng et al., 2014).

The conventional economic theory has long held the position that a firm size is positively correlated with growth by reason of economics of scale. Thus, it was suggested that large firms grow better than smaller ones (Bartlett and Bukvic, 2003). However, Gibrat's law had proposed that the rate of growth of a firm is independent of its size and all firms have the same probability to grow independently of their size within the same industry (Gibrat, 1931). This law was criticised in 1960's for the lack of empirical evidence. However, further developments in stochastic models were conducted to improve theory (Sutton, 1997).

Small firms were found to grow faster than larger ones as a result of flexibility in their strategic decisions (Audretsch et al*.,* 2004; Moreno and Casillas, 2007; Smallbone et al., 1995). It may be easier for a firm with fewer workers and owners to react to changes in the marketplace (Barkham et al., 1996). Several explanations have been offered for the faster growth of small firms which might be due to their competitive advantage that they possess which facilitates targeting niche markets and reaching customer. Their size enables them to adapt more easily than large firms since they are close to customers and suppliers thus, can seek opportunities for developing their products. In manufacturing industries, SMEs produce a variety of goods that survive and grow in competition with larger enterprises. That is because SMEs differentiate their products by nature. They create a niche market to operate in and some have better chance to survive as many are specialised in a variety of simple items. Moreover, some SMEs produce products for other industries. The features of SMEs such as flexibility, quick response to market changes and innovativeness are important for their success and growth. However, it was argued that growth rate achieved by small firms operating in developing countries are lower than those operating in developed economies (Welter and Smallbone, 2003; Sleuwaegen and Goedhuys, 2002). On the other hand, Obeng et al. (2014) and Kinsella et al. (1994) suggested that firm growth is positively related to their size. It was suggested that larger firms will have more skills, experience, knowledge, resources, management system, and practice that will help them to grow better than smaller firms that suffer from lack of resources. As a result of growing in size to a certain level, the owner loses his ability to maintain direct contact with workers.

Moreover, firm size is one of the most studied variables related to internationalisation of firms. It has been found to be an important factor in determining firm performance (Saixing et al., 2009; Kalantaridis and Vassilev, 2011). Scholars argued that large firms are more likely to engage in international activities compared to small ones (Andersson et al., 2004). Those firms with a large number of employees will have a wider pool of human capital resources and will have a more effective competitive advantage (Westhead et al., 2004). Moreover, the larger stock of resources will decrease the perceived risk of doing business. As exporting requires a large amount of

resources, larger firms are considered to be superior to smaller ones (William, 2011). Conversely, small firms that are resource-poor will be more vulnerable to sunk costs discouraging them to export (William, 2011). Due to their limited resources, they will not be able to gain the same level of economies of scale as larger ones. However, studies found mixed results concerning the relationship between firm size and its export performance. Evidence was found on this positive relationship (Eusebio et al., 2007; Bilkey, 1978; Hall and Tu, 2004) and a positive relationship between size and export intensity (Roper et al., 2006). On the other hand, a negative relation was found (Boodai, 2001) while some studies found no relation between size and performance (Bilkey and Tesar, 1977; Cavusgil, 1984; Saixing et al., 2009; Watson, 2001). According to the 'stage theory of internationalisation', small firms internationalise stepwise (Bilkey and Tesar, 1977; Reid, 1983) due to their lack of resources such as technological, personnel, skills or financial. Thus, by growing larger this will accumulate resources and knowledge that help in their exporting activities (Karadeniz and Gocer, 2007). As firms grow, they will have more access to resources and therefore will be able to increase their commitment to international activities. On the other hand, large firms have advantages compared to smaller ones in term of resources, power, and performance (Kundu and Katz, 2003) enabling them to better engage in exporting activities. However, this was debated as Calof (1994) pointed out that size is not important in exporting process of small firms as they have a unique way, such as networking, and possess a competitive advantage enabling them to compete in global marketplace. According to the network model, small firms can overcome their weaknesses and lack of resources through establishing a network where they can access more resources (Zarah et al., 2004; Ellis and Pecotich, 2001).

The relevance of firm size in explaining innovation stems from the resource-based view of firms. It suggests that innovation depends on the availability and accessibility of resources (Battisiti et al., 2010). However, previous research has not been conclusive regarding the relationship between innovation and size (Robson et al., 2009; Bhattacharya and Bloch, 2004). The work on the relationship between innovation and size was proposed earlier by Schumpeter (1942) in the *Schumpeter Mark II* patterns of innovation and a positive relationship between size and innovation in firms was found (Freel and Robson, 2004). However, Martinez-Roman and Romero (2013) found no relationship between innovation and size. It was suggested that larger firms have access to more financial resources which facilitates their engagement in R&D investments, exploiting new technology and hiring more expertise in their areas which facilitates innovation within firms (Avermaete et al., 2003; Bhattacharya and Bloch, 2004) in addition to greater range of knowledge and skills (Rogers, 2004). This could be achieved due to the benefit they attain from scale economies (Hadjimanolis, 2000a). The size of firm leads to increase of

capabilities and internal resources of firms (Acs and Audretsch, 1990) thus, firm size was found to be a significant determinant of the number of new products produced. A study in Germany U.K. and Ireland, found a positive relationship between innovation and turnover growth in firms but, a less direct link between innovation and employment growth (Roper, 1996). It was found that the turnover growth in innovating firms was faster than in non-innovating firms. On the other hand, in U.K. and Ireland the employment growth in innovating firms was faster than that in the non-innovating firm. However, this was not the case in Germany as those innovating firms were reducing their employment more than the non-innovating ones (Roper, 1996). Studies aimed at investigating the difference between innovating and non-innovating firms identified critical success factors such as size (Fritsch and Meschede, 2001) to play an important role in their growth. Although, it was suggested that small and young firms face a different technological and economic situation that affects their innovation and are resource constrained (Ortega-Argiles et al*.,* 2009, cited in Pellegrino et al., 2012) studies found them to be more innovative. It was suggested that due to their small size and flatted structure, they are able to respond to the market quickly and be flexible (Rogers, 2004). Furthermore, they are close to the customers and are able to respond to their needs and demands easier than larger firms by providing innovative product and service. Therefore, small firms are more likely to innovate than larger ones.

In conclusion, the realisation that small firms grow faster than large firms has contributed in shaping the economic policies of many developed countries. The need for government intervention to support SMEs is important by adopting new technologies, financial and marketing, and providing them with necessary information (Roper and Hart, 2013). This has led to increasing direct support for small firms and policies to support them (Aryeetey and Harrigan, 2000). These policies are intended to motivate growth in small firms and provide needed job avenues. However in many developing economies, small firms sector has not grown sufficiently enough to reduce unemployment or fulfil its promise as an engine of growth (Goedhuys and Sleuwaegen, 1999). This is the case of SMEs in Egypt as it suffers from the ‘missing middle’, highlighting the importance of examining the determinants of growth in small firms. With no doubt, firm size is considered an important factor to firm growth (Davidsson et al., 2002).

2.4.1.4 Industry Sector

The firm industry and sector it operates in is regarded as one of the internal factors associated with firm growth (Davidsson et al., 2002; Bridge et al., 2003; Andersson, 2003). The impact of different sectors on small firm growth indicates significant growth rates (Storey, 1994; Davidsson et al., 2002). It was found that firms operating in high technological firms will be expected to

have a higher growth rate than those operating in low-technological oriented industries (Littunen and Niittykangas, 2010; Chamanski and Waago, 2003; Kinsella et al., 1994). Moreover, opening up to international market requires competitiveness and flexibility among all industries. Therefore, industries in all sectors must find a competitive edge where they could compete as industry-specific features affect exporting activities (Sterlacchini, 2001). There is a difference between those who operate in high-technology sectors and those in low-technology sectors, though; both must provide a unique product in order to facilitate their exporting activities. A study done by Javalgi et al. (2000) on 20,204 manufacturing firms in the Midwestern state found that exporters and non-exporters differ significantly by industry type. Those who were engaged in electronic machinery, equipment, and suppliers were most likely to export compared to printing, publishing, rubber, and wood products that were least likely to export.

Furthermore, the type of industry firm operates in creates a competitive environment where the firm can innovate. Those firms that are innovative in nature are more likely to grow (Wiklund et al., 2009). On the other hand, different industries have different innovativeness needs. For example, in pharmaceuticals and IT firms, the level of innovativeness is higher than those in service one. The difference in industry characteristics largely explains the difference in innovation across companies (Furman et al., 2002) while empirical research found that industry plays an important role in the development and diffusion of new technologies (Fagerberg, 2004; Dinlersoz and MacDonald, 2009; Samaniego, 2006). Thus, industry is considered to be one of the determinants of innovativeness, exporting, and growth in SMEs.

2.4.2 Managerial Characteristics

Previous studies had examined thoroughly the influence of managerial characteristics on firm growth (Obeng et al., 2014; Bridge et al. 2003; Storey, 1994; Barkham et al., 1996). Manager motives and need for growth might differ from one person to another (Bridge et al., 2003). Some managers do not intend to grow and remain at that level as the uncertainty of firm growth affects their willingness to grow and expand, while others are motivated to grow their businesses. The reason behind that is some entrepreneurs start their business as a result of unemployment, so they are pushed into starting the businesses. Therefore, their main objective is not growth (Holmes and Gibson, 2001). However, Andersson (2003) pointed out the importance of understanding the vital role manager characteristics play in firm growth. It was argued that due to different types of entrepreneurs with different traits and motives, there exist different impacts on firm growth (Bridge et al., 2003). Many motivational theories aimed at understanding the

entrepreneurial behaviour behind acting in a certain way. It was suggested that the owner commitment and motive influence growth of firms (Smallbone and Wyer, 2003). However, the motivation of the owner is changed over time (Bridge et al., 2003) as firm growth is seen to be risky (Storey, 1994). The growth of a firm is considered to be a function of the manager personal abilities and skills. This is why factors such as work and management experience, number of founders, education, age, gender, and human capital are regarded as examples of determinants of growth (Colombelli, 2015; Obeng et al., 2014; Lockett et al., 2013; Wilkund, 2001; Storey, 1994; Barkham et al., 1996).

Moreover, the previous section shed light on the importance of firm characteristics; this section will focus on the managerial factors affecting them. There are different factors affecting performance, growth, innovation, and exporting behaviour of firms; one of these categories is related to entrepreneurship characteristics. Studies focusing on SMEs internationalisation highlighted the importance of addressing international entrepreneurship approaches as it is considered to be an entrepreneurial act affecting their exporting activities (Lu and Beamish, 2001). Owners are important in shaping the firm decision to innovate and export. Thus, scholars had studied the effect of entrepreneur characteristics on firm decision-making and divided them into objective and subjective factors (Sonia et al., 2005). The objective factors are related to the decision maker education, training, language, capabilities, and previous work experience in international activities (Obeng et al., 2014; Barringer et al., 2005; Rauch et al., 2005). On the other hand, the subjective factors refer to the decision maker perception towards risk, profit, and exporting cost. However, this research will focus on the objective factors and will encompass the following independent variables to examine the entrepreneur characteristics which affect the firm growth, exporting and innovation activities. Those variables are the number of owners in the firm, gender, owner age, education level, and previous experience.

Moreover, firms that are internationally involved are associated with manager attitude towards internationalisation. According to Nummela et al. (2004), they found that those managers are well educated, have experience dealing with foreign markets, have low psychic distance, and risk takers. This attitude towards firm exporting has a positive relationship towards its performance and growth (Knight, 2001; Ireland et al., 2003). In applying this perspective, manager characteristics are considered to impact firm exporting activities leading to its growth; as it depends on opportunity and entrepreneur who seeks to exploit these opportunities. This was supported by Amarasena (2013) who found that managers are responsible for the successful export performance.

Furthermore, according to Schumpeter (1934), “Entrepreneurial act is the carrying out new combinations”. This new combination may be the introduction of a new product, technology, entering new markets, changing in the organisation, access to new sources for the supply of raw materials or could be a new way of marketing. Thus, their role cannot be neglected in growth, development, and change (Calvo, 2006; Freel and Robson, 2004). In this perspective, the decision of the entrepreneur highly affects the firm. On the other hand, the innovation process is considered to be a complex decision where the decision of the firm to innovate is divided into firm decision (whether or not to innovate), which innovation strategy to develop, and how to acquire the necessary technology to reach innovation goals. A study on 1500 small firms in Spain investigated the effect of owner and firm characteristics on innovation (Martinez-Roman and Romero, 2013). It was found that owner personal characteristics have a great influence on firm’s performance.

Taking into consideration the importance of owner characteristics in firm growth, exporting, and innovation, this section will provide a brief review of the internal factors affecting their determinants. Figure 2.2 shows factors affecting growth, exporting, and innovation of firms.

Figure 2.2 - The Determinants of Firm Growth, Exporting, and Innovation Activities- Manager Characteristics

2.4.2.1 Number of Owners

It was suggested that firm growth is positively correlated with number of founders who manage and operate the firm. Storey (1994) found that firms with more than one founder are more likely to grow rapidly than those who were individually owned. This is due to accumulated skills, experience, knowledge, and resources that can be pooled to operate the business which results in high quality of work (Kinsella et al., 1994; Barkham et al., 1996). Furthermore, the risk will be shared among the team. Firms owned by several owners are more inclined to grow than firms with just one owner (Bridge et al., 2003). However, Barringer et al. (2005) did not find a link between the number of founder and the growth of firm. It depends on how much time the team get involve and contribute to the firm. In addition to that, working in a team could create conflicts and cause a slowdown of the decision-making process.

On the exporting level, the number of founders can play a role in exporting activities of small firms. Since one of the main barriers that affect SMEs is the lack of resources thus, drawing on a pool of founders will overcome such barrier. The team will be able to compile their skills, experience, networks, and education in order to start exporting. Moreover, the management teams in a study conducted in Australia, Canada, Ireland, and New Zealand were able to internationalise early because of their allied professional and social networks in addition to their experience which leads to combination of resources (McDougall et al., 1994, cited in Loane et al., 2007). Thus, there is a significant impact of teams on exporting and innovation activities of small firms. This diversity will affect their competitive attitude and their reaction towards market opportunities (Hambrick et al., 1996).

2.4.2.2 Owner Gender

Studies found differences between males and females in terms of firm growth, motives, and commitment (Spilling and Berg, 2000). It was found that women are at a disadvantage than men in starting their firm due to barriers in education, family pressure, and work environment (Kalleberg and Leicht, 1991). However, female entrepreneurs were found to be dominant in African countries (Adekunle, 2011; Rankhumise and Rugimbane, 2010, cited in Obeng et al., 2014). Despite, the growing number of female entrepreneurs, Dahlqvist et al. (2000) found a negative relationship between females and growth. This might be due to the dual responsibility that female entrepreneurs face from household and family. Unlike males, who are highly involved in their firms, females have other responsibilities which might limit their ability to foster their businesses. Moreover, it was suggested that males are more likely to be risk-takers than

females (Mazzarol et al., 1999) resulting in a higher growth rate. The result of a review of fourteen studies by Storey (1994) examining the effect of gender on firm growth found only two to have a significant impact on firm growth. While, Obeng et al. (2014), Abor and Biekpe (2006) and Shelton (2006) found that males are more likely to grow than females. On the other hand, Jones (1991) found that females were more likely to grow; however, Kangasharju (2000) found no difference between the firms operated by males and females.

Furthermore, the relationship between gender and innovation has attracted increased interest among researchers (Johansson and Lindberg, 2011; Danilda and Thorslund, 2011). The literature on gender and innovation suggested that gender is a significant factor affecting innovation in small firms. However, most studies had indicated that men are more innovative than women. It was suggested that women have low self-confidence and their household and family have a negative impact on their innovativeness (Nahlinder, 2010). On the other hand, men were found to be more likely to radically innovate (Crowden, 2003). Consequently, men are assumed to be highly innovative while women are not (Blake and Hanson, 2005). Future research could take into account whether access to innovation resources hinder women innovativeness and explains why women and men contributions to innovation differ.

Gender is becoming an interesting topic nowadays and many studies are focusing on women entrepreneurship and their role in economic growth. Females are under-represented in small business ownership where they account for 40 percent of UK workforce (Stokes and Wilson, 2006). Although, there are extensive studies regarding growth in small firms, many ignored the effect of gender differences.

2.4.2.3 Owner Age

The growth of firms is found to be associated closely with the age of owners. A number of studies have examined the effect of owner age on firm growth and found mixed results. Entrepreneur age may vary ranging from 25-44 (Reynolds et al., 2000) and their motives to start a business vary too. Many studies found a negative relationship between owner age and firm growth (Davidsson et al., 2002; Autere and Autio, 2000; Storey, 1994; Barkham et al., 1996). Storey (1994) suggested that younger owners are more likely to grow, as they seek for a better lifestyle, which was supported by only two studies out of the eleven studies examining the effect of age on firm growth. Young managers were suggested to be more motivated, energetic, and interested in growing their business and take risk compared to older managers. They are flexible

to changes and can adapt easier to surrounding. Moreover, it was found that younger owners are more committed to their work which impact growth (Heshmati, 2001). Their need for achievement and enthusiasm to expand the business is generally necessary for growth. Unlike older managers who are resistance to change and use same old ways in operating the firm and less inclined to adopt innovative behaviour or adhere to a new idea. They are attracted to a certain organisational quo which affects their growth negatively.

On the other hand, there is evidence suggesting a positive relationship between age and growth (Parker, 2004; Kautonen, 2008; Andresson et al., 2004; McGee and Sawyerr, 2003). Moreover, a review conducted by Storey (1994) found a positive relationship between age and firm growth in three studies while the remaining six failed to find any relationship. It was argued that older managers are more educated, skilled, and experienced which affect the growth of firms. This finding was supported by a study in Indonesia in which older entrepreneurs were more successful than younger ones (Kristiansen et al., 2003). Moreover, older owners were found to have greater ability to solve problems. The third argument between these two findings suggests that middle-aged owners are more likely to benefit from older and younger owner characteristics. These benefits include experience, resources, credibility, and physical energy (Storey, 1994). Thus, middle-aged owners will benefit from the flexibility of younger owners and the experience of older ones which facilitates their growth.

On the other hand, age is considered to be an important factor influencing the internationalisation activities of firms as it takes time to acquire the necessary skills and collect information about different foreign markets. A study done on different age groups and internationalisation activities found mixed results. Stokes and Wilson (2006) found 25-34 year category a common age as older managers do not bear the risk. As for Suarez-Ortega and Alamo-Vera (2005) they found that managers' age was not related to their export development.

In SMEs, usually managers are the owners of the firm. Many studies found that there are a negative relationship between the owner age and innovation. Older managers were found to resist changes. On the other hand, younger managers have the enthusiasm to innovate and grow their business, especially with their limited resources. Moreover, age was found to have a positive influence on innovation due to its association with the manager experience (Marvel and Lumpkin, 2007; Cegarra-Navarro et al., 2011, cited in Martinez-Roman and Romero, 2013). The experience can increase the owner ability to exploit new opportunities and have better risk management (Shane, 2000; Shane and Khurana, 2003).

2.4.2.4 Owner Education

Education provides the manager with knowledge and experience that benefit firm performance (Obeng et al., 2014; Davidsson et al., 2003). It plays an important role in shaping manager decision and positively correlated to growth (Brown et al., 2005; Goedhuys and Sleuwaegen, 2010, cited in Obeng et al., 2014; Roper, 1998; Smallbone and Wyer, 2000; Wiklund and Shepherd, 2003). Education was found to stimulate growth in firms by enhancing its capabilities (Nichter and Goldmark, 2009) since better education system contributes to the development of manager learning, analytical, and managerial abilities. It introduces managers to different disciplines that enhance learning ability such as financial, strategically, and managerial qualifications. On the other hand, Roper (1998) and Barkham et al. (1996) found that the educational variable had an indirect impact on growth through shaping the type of business strategies adopted which affect firm growth. Moreover, education can indirectly improve manager communication skills and help in overcoming difficulties. Similarly, Storey (1994) found that there was no identified impact of owner education level on small firm growth in eight studies. Meanwhile, Obeng et al. (2014) found that education is associated with employment growth in manufacturing sectors; however, a negative association was found in the service sector.

Moreover, education plays an important role in shaping the cognitive abilities and skills of managers. It was suggested that the higher education, the better the cognitive ability and skills (Reid, 1981) this positively related to exporting performance (Bilkey and Tesar, 1977). Roper et al. (2006) found that skilled workers and graduate employees are more likely to export. While Ganotakis and Love (2012) suggested that education rather than experience is associated with exporting as a result of investing in human capital. It was argued that those who are well educated are positively related towards better exporting performance. They are able to evaluate exporting strategies, acquire knowledge and skill capabilities that enhance their exporting performance (Sonia et al., 2005).

Furthermore, the role of manager educational level as an antecedent of innovation has been tackled in the literature (Hadjimanolis, 2000b). However, there was little evidence on the relationship between innovation, performance and owner education. Meanwhile, Roper (1998) found a link between owner education and firm innovative performance. It was argued that the higher the education level of the owner, the higher is the innovative activities. Moreover, knowledge is considered to be one of the important elements affecting innovation in firms (Curado et al., 2011, cited in Martinez-Roman and Romero, 2013). It helps in assimilating new

technologies and contributes to the learning process. Nevertheless, the training and educational background of the owner was found to be an important element in explaining innovation in small firms (Keizer et al., 2002; Koellinger, 2008; Romero and Martinez-Roman, 2012). A study conducted on innovating firms in U.K. and Ireland found that they have more graduate students compared to non-innovating ones, stressing the importance of 'education' in the innovation activities (Roper, 1996). However, not all studies found a positive influence of education on innovation (Keizer et al., 2002).

2.4.2.5 Owner Experience

Most small firms generally learn on the job however, work experience may contribute to their growth. This could be achieved by expanding the capabilities of owners and employees through acquiring skills and knowledge or indirectly by expanding the owner social network (Nitcher and Goldmark, 2009). Moreover, it allows managers to develop wider and complex judegments, assessments and venture creation (Lockett et al., 2013). Experience may help the owner to start their business as they are aware of its requirements. This experience could be a result of technical or knowledge that was gained from previous work or customer interaction and market experience. Moreover, the experience gained from previous work can give access to networks which have been developed earlier and can help in new business formation (Wiklund and Shepherd, 2003; Wiklund et al., 2009). The manager experience could help in preventing and avoiding any previous problems encountered. However, it could suppress their creativity if they used the same approach in solving problems. It was found that previous experience positively affected the growth of firms (Littunen and Niittykangas, 2010; Wiklund et al., 2009; Rauch et al., 2005; Barringer et al., 2005; Storey, 1994; Kinsella, 1994). In the review conducted by Storey (1994) experience was found to impact the growth of firms. While, six studies found a positive relationship between previous experience and firm growth, only one showed no relationship and six found no effect. However, other studies found that accumulated experience could help in firm growth due to knowledge and network experience gained. Lockett et al. (2013), Wiklund et al. (2009), and Rauch et al., (2005) found a positive relationship between growth and manager previous experience as it influences the number of market opportunities. It is not only the previous experience of the manager that was seen as a factor affecting growth but, the size of the firm that used to work in as well. It was debated that those who work in larger firms are more familiar with better techniques, technology, skills, venture creation, and management compared to smaller ones. However, Storey (1994) suggested that the impact of previous experience on firm growth depends on the owner ability to adopt the learning acquired and making use of

previous experience to be transformed to the firm. It was suggested that experience is positively associated with firm growth when this previous experience is relevant to the nature of the new firm (Kinsella et al*.,* 1994). On the other hand, Obeng et al. (2014) found a negative relationship between previous experience and employment growth while Frankish et al. (2007) did not find any relationship between experience and firm growth. It was suggested that the experience gained from previous work might not be applicable to the new firm as each firm has its own circumstances and position. In summary, managerial previous experience provides an insight into how the firm can use skills for managing firms; however, the debate about the effect of previous experience on firm growth remains.

Nevertheless, firm's financial resources are not sufficient to explain the decision to export. Therefore, experience and learning are another factor that affects SMEs exporting (Love et al., 2015). Through experience, managers can gain skills and knowledge which facilitates exporting. It was suggested that there is a positive relationship between previous experience both in the domestic and foreign market on export performance of SMEs (William, 2011). The exposure to foreign market brings knowledge and network which plays an important role in the export performance of SMEs (Ellis, 2008; Ellis and Pecotich, 2001); as the owner could be part of the network and provide information for export opportunities (William, 2011).

Meanwhile, the degree of innovativeness and knowledge is associated with owner previous experience (Gray, 2006). Firms that are more likely to network, communicate and participate in management are more likely to grow better (Gray, 1998). Thus, the previous experience could help in maintaining resources and firm capabilities as well as manager competencies. Such experience also could affect their way of solving problems and taking the risk. Experience gained from previous work or industry could help in building networks with suppliers and customers. Therefore, it is considered as a determinant of innovation, exporting and growth in small firms.

In summary, previous research on small business has attracted the attention of policymakers, academics and practitioners. Extensive research was developed to examine the growth of firms (Love and Roper, 2015; Wright and Stigliani, 2012; Lockett et al., 2013; Bridge et al., 2003; Manbula and Sawyer, 2004; Hart and McGuinness, 2003; Andersson, 2003; Littunen, 2001). Factors affecting firms growth is mainly grouped into three categories based on Storey (1994), Barkham et al. (1996), Bridge et al. (2003) and Chamanski and Waago (2003) works. However, the body of research on the relationship between exporting and innovation activities and growth

in Egyptian SMEs is scarce. This may be attributed to the fact that there is a lack of dataset and inconsistent definitions among ministries and institutions. As the topic is gaining an increased interest, still there is not a strong conclusion regarding the impact of export and innovation of SMEs on firm growth in Egypt. Therefore, the focus of this study remains with what impact does exporting and innovation activities have on firm growth in Egypt. The next section will briefly present the main focus of the study namely exporting and innovation activities.

The existing theories on firm growth failed to address and explain the dynamics of small firms in developing countries (Sleuwaegen and Goedhuys, 2002). It is not sufficient to apply those theories that address small firms in well-developed economies on those who are still developing or emerging. Thus, the main purpose of this study is to develop a framework that helps in understanding the determinants of growth in the Egyptian SMEs with particular focus on a) the role of exporting on firm growth, b) the role of innovation on firm growth, and c) the role of innovation in exporting in SMEs. Figure 2.3 below shows the factors understudy that affect the growth of firms while holding firm and managerial characteristics constant.

Figure 2.3 - Factors Affecting Firm Growth

2.4.3 Exporting Activities

Exporting is important for achieving growth (D'Angelo, 2012; D'Angelo et al., 2013; Gashi et al., 2014, Esteve-Perez and Rodriguez, 2013, cited in Love et al., 2015). It plays an important role in the growth of any economy as it is a source of foreign currency. Moreover, Littunen and Niittykangas (2010) found that exporting had a positive effect on firm performance as a result of increased market expansion and innovation. While the relationship between exporting and growth is gaining increased interest, still research had not produced strong conclusion regarding this relation in developing countries specifically in Egypt. Therefore, the growth framework will examine the exporting activities of small firms as a determinant of growth in Egypt.

2.4.4 Innovation Activities

Innovation is considered to be one of the most important drivers for firm growth (Ganotakis, 2012). Through innovation firms are able to create a competitive advantage which fosters their ability to introduce new products, process or marketing innovations. Based on Robert Solow (1956) work, many papers were developed to investigate the relationship between economic growth and innovation. In his work, the model used three main factors that influence the economic growth namely: capital, labour and technology. Paramount to the understating of those factors, the innovation activities of firms will be examined as a determinant of growth.

Moreover, previous work found a positive relationship between innovation and growth in the manufacturing industry (Cozza et al., 2012) which depends on its competency. Further empirical study on French firms during the period 1992-2004 found a positive relationship between innovation and firm growth (Colombelli et al., 2013) while further research found supporting evidence for this relation (Corsino, 2008; Roper, 1997). However, other studies did not find a relationship between innovation and firm growth (Bottazzi et al, 2001; Geroski and Mazzucato, 2002). Notwithstanding the importance of innovation, few studies focused on their effect on growth and exporting activities in small firms, specifically in emerging economies.

2.5 Chapter Summary

Growth is a vital indicator of a viable economy and enterprise. Thus, the welfare of the society depends on successful growing firms who provide job opportunities and create innovative products. However, SMEs face strong resource constraints that affect their growth therefore, studies were developed aiming at examining the determinants of growth in firms. While most

studies focused on developed countries or high-technology industry, this research considers the determinants of growth in Egyptian SMEs.

The focus of this chapter is to review the contribution of literature regarding the internal factors affecting small firm growth. The review provides a list of internal factors determining small firm growth based on previous work (Storey, 1994; Barkham et al. 1996; Kinsella et al., 1994) to be controlled in the research. It is important for owners to be aware of these factors while developing their growth strategies. Due to the heterogeneous nature of growth in small firms, there is no single dominant factor which seems to affect growth as they act differently towards these challenges. Thus, the importance of examining how a range of factors affects growth in firms will help in the proposed model, holding them constant.

The chapter then introduced briefly the exporting and innovation factors as a main strategic tool to achieve growth within the firm. A detailed discussion regarding those factors and the theoretical background will be presents in the next chapter. Exporting and innovation activities are regarded as the most important factor in firm growth, therefore; the main focus of this study will build on them and examine their effect on firm growth. In addition to that, it will develop the hypotheses understudy which will be examined in later chapters.

Chapter 3: The Role of Exporting and Innovation on SMEs Growth

3.1 Introduction

In a world that is changing dramatically, the evolution of small firms to larger firms is a key step for economic growth. As a result, studies aiming at investigating the determinants of SMEs growth are increasing as they are considered to be a source of wealth creation (Li and Rama, 2015; Obeng et al., 2014; Wright and Stigliani, 2012; Robson et al., 2012; Andersson et al., 2004). However, SMEs are experiencing greater competition both domestically and internationally. If small firms remain small, then their level of productivity will be low which will eventually affect economic growth (Economist, 2012). It is particularly necessary for SMEs in emerging and developing countries to export; due to the increasing competitive pressure which hinders their growth. Meanwhile, governmental appropriate policies have a salient influence on fostering their activities; thus, more studies are needed to investigate the determinants of growth in SMEs. Most governments acknowledge the value of exporting and innovation to economic growth but, still need more focus on developing countries. There are numerous benefits that export and innovation can offer to both, firm and country. On the macro-level, exporting increases employment levels and standard of living, while considered as a source of foreign currency. On the other hand, innovation helps in developing competitiveness that facilitates exporting by developing new technologies to stand the technological challenges faced in the international market. The increasing importance of the relationship between exporting, innovation, and growth in SMEs is reflected in a growing body of literature (Love and Roper, 2015; D'Angelo et al., 2013; Ganotakis, 2012; Ganotakis and Love, 2011; Harris and Li, 2011).

In spite of the large volume of empirical studies dealing with internationalisation and innovation, few related to SMEs as much was based on large firms (Robson and Obeng, 2008). Therefore, based on the importance of exporting and innovation studies as an important determinants of firm growth and due to the value of SMEs in economic development (Love and Roper, 2015; Onetti et al., 2012; Wright and Stigliani, 2012) this study aims at bridging the gap between exporting, innovation, and growth in emerging countries specifically Egypt. The chapter is divided into three sections. The first section will provide a review of the exporting literature, definitions, determinants, and its effect on growth concluding with the first hypothesis. The second section will deal with innovation literature, definitions, types, determinants, and its relationship with growth to develop the second hypothesis for the study. Finally, the third section will discuss the relationship between innovation and export; based on this analysis the third hypothesis is presented and a proposed research model is developed.

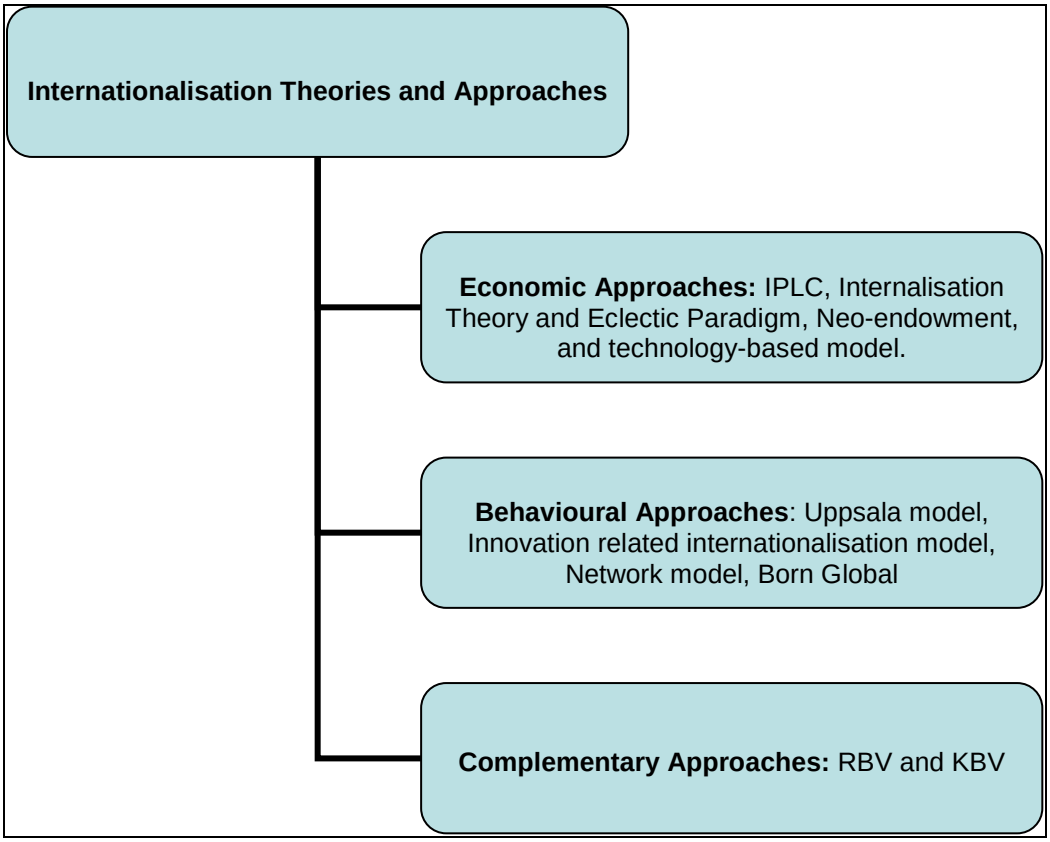
3.2 Exporting and Growth

The literature on exporting performance has a long history yet, there is no consensus over the evidence regarding SMEs. A strong motivation for firms to engage in exporting activities depends on its growth objectives (Leonidou et al., 2007). For small firms, exporting is a developing tool where they increase productivity and market share, and a requirement for their growth and success (Saixing et al., 2009; Rundh, 2007). Accordingly, researchers aimed at understanding and examining firms' behaviour in global marketplace which is facilitated by the General Agreement on Tariffs and Trade (GATT). The GATT had paved the way for firms to go internationally by reducing barriers to enter foreign countries; thus, encouraging them to export. It is becoming more vital for firms to grow internationally rather than locally as competition is increasing (Manolova et al., 2002) and business environment is affected by international economic factors (Andersson et al., 2004). Scholars had researched internationalisation as an important phenomenon for the development of countries, industries, and productivity (Korsakiene and Tvaronaviciene, 2012). Meanwhile, small and medium-sized firms exporting behaviour had attracted the significant attention of researchers due to the crucial role they play in reinforcing economies by securing job opportunities which increase growth of the economy and create wealth for nation's welfare (Westhead et al., 2004). It was debated that growth outside the country is more important than growth within the firm (Manolova et al., 2002). Thus, SMEs that are internationally active contribute more to future growth (Knowles et al., 2006) however, both are regarded important. Therefore, it has been researched over the past three decades producing an extensive body literature.

Literature has addressed different behavioural theories of firm's internationalisation (Andersen, 1993; Leonidou and Katsikeas, 1996; Leonidou, 2004; Axinn and Matthyssens, 2001). The theories of internationalisation emerged in literature beginning with export literature as early as the 1960s and the development of behavioural stage models during the 1970s and 1980s (Cooper et al., 1994). In late 1950's and 1960's, most of the research on internationalisation focused only on the internationalisation activities of large multinational companies (Ruzzier et al., 2006) ignoring exporting activities in SMEs. Thus, the importance of developing more understanding about internationalisation activities in small and medium-sized firms is recommended (Andersson and Floren, 2008). Research which examines new ventures, small and medium-sized enterprises (SMEs), multinational enterprises (MNEs) and 'born-global' firms had provided an array of findings regarding the drivers of internationalisation and factors affecting success. It has been found that international expansion is crucial for not only multinational enterprise (MNEs) but also for small and medium-sized firms (SMEs). However, as

competition increases and becomes fierce, due to the decrease of internationalisation barriers, business has no option but to compete in global market. This competitive environment creates a threat to firms and international expansion becomes a matter of survival rather than a choice (Johanson and Vahlne, 1977). Firms that neither don't have the competitive advantage that enable them to face the opportunities nor the challenges of globalisation will fail (Rutashobya and Jaensson, 2004). Historically, literature had examined firm internationalisation activities and behaviour from different perspectives and a stream of studies had introduced a variety of theories regarding such activities. Moreover, a number of models were developed focusing on the internationalisation of firms which are important in studying the behaviour of firms towards global marketplace. Figure 3.1 presents examples of internationalisation theories and models.

Figure 3.1 - Internationalisation Theories and Approaches in Firms



Compiled by the author

3.2.1 Definitions of Firm Internationalisation

There is no universal accepted model of firm's behaviour to engage in internationalisation activities (Bilkey, 1978; Mtigwe, 2006). Thus, in order to better understand internationalisation of

firms, a variety of definitions are developed to capture this phenomenon. Internationalisation is defined as the process in which the "enterprise gradually increases its international involvement... it evolves in the interplay between the development of knowledge about foreign markets and operations on one hand and an increasing commitment of resources to foreign markets on the other hand" (Johanson and Vahlne, 1990: 11). Further study defined internationalisation as "... the process of increasing involvement in international operations" (Welch and Luostarinen, 1988: 36, cited in Shoobridge, 2004). Meanwhile, Vila and Kuster (2007) had seen it as the process by which firm moves from being operating in domestic market to being engaged in foreign markets. While Andersson et al. (2004) viewed it as those firms developing significant proportion of their revenue (25%) from foreign market sales.

Meanwhile, Schumpeter (1939) had identified internationalisation as an innovative act while innovation patterns are the way to internationalisation. The decision to internationalise is seen as 'innovative' act (Fillis, 2001) it is considered as a new way to provide a product and/or service. However, innovation enables small firms to internationalise quickly thus, can leapfrog by developing networks in foreign countries and offering adaptable, flexible, and faster products for consumers. Moreover, internationalisation could also be defined as the "adaptation of firms operation to international environment" (Calof and Beamish, 1994: 116). On the other hand, Ruzzier et al. (2006: 479) defined internationalisation of firms based on resource-based view as "the process of mobilising, accumulating, and developing resource stocks for international activities". Furthermore, it is also considered as any activity the enterprise engage in such as importing, exporting, franchising, foreign direct investment and licensing (Manolova et al., 2002).

Even though there are several strategies to reach the global market, this study will focus on exporting as a common strategy for SMEs to engage in. It is regarded as the easiest and less risky strategy for SMEs to engage in international market thus, most SMEs prefer it. Meanwhile, exporting will be defined in this study as "those firms that sell their products or services overseas".

3.2.2 Exporting and Productivity

The relationship between exporting and productivity was extensively researched under the trade and growth literature. The learning-by-exporting and self-selection effect provided an explanation for the casual relationship between exporting and productivity. The self-selection was based on the heterogeneous firm theory while the learning-by-exporting was rooted in the

endogenous growth theory (Grossman and Helpman, 1991 cited in Love and Mansury, 2009). The self-selection argues that only the most productive firms will be able to engage in international market due to their ability to overcome the sunk costs. On the other hand, the learning-by-exporting effect argues that through exporting firms get exposed to new technology which improves their productivity. Studies have attempted to test for both relationships however, they received mixed results. A review done by Pham (2015) and Sharma and Mishra (2015) on different studies highlighted that Arnold and Hussinger (2004) found evidence of self-selection on German firms while Alvarez and Lopez (2005) for Chile firms; however, others did not find any relationship (Bernard and Jensen, 2004; Bigsten et al., 2004). On the other hand, Pham (2015) and Sharma and Mishra (2015) found evidence of learning-by-exporting effect in Girma et al. (2004), Greenway and Kneller (2007) and Park et al. (2010) works. However, Pham did not find evidence in Hung et al. (2004) and Wagner (2002) works. It was found that exporting firms are more profitable and perform better than non-exporters. A study done by Pham (2015) on Vietnamese manufacturing firms using a longitudinal study found that exporters tend to have high labour productivity due to their superior efficiency. On the other hand, a study done on service firms found that productive firms self-select into export markets but once export, productivity does not affect exporting (Love and Mansury, 2009). These results reflect the importance of self-selection and learning-by-exporting phenomena which will be discussed later in the chapter to explain the relationship between innovation and exporting activities.

In conclusion, exporting has been advocated as a significant means for the transfer of innovation and knowledge which spurs productivity and growth in firms. Moreover, exporters were found to be more productive than non-exporters (Girma et al., 2004; Wagner, 2007, 2012; Castellani, 2002). As a result of their importance, most studies focused on the effect of exporting on productivity nexus (Pham, 2015; Yaşar, 2015, 2007) however, few studies focused on the effect of exporting on employment growth (Bernard and Jensen, 2004). As Egypt is suffering from the 'missing middle' and economic decline, the need to focus on small firms' growth in terms of employment is important. With these arguments, this study attempt to address the gap by examining the effect of exporting on firm growth focusing on employment growth rather than productivity, therefore, the following hypothesis is developed

H1: Exporting activities significantly affect SMEs growth positively.

3.3 Innovation and Growth

In a world of changing needs and demands, innovation is regarded as an important element of competition and a major factor contributing to firm growth and development (Zeng et al., 2010). It is a tool for SMEs to improve their performance in terms of growth (Maldonado et al., 2009) as growth expectations have been connected with product innovation (Verhees et al., 2010). It is becoming crucial to recognise that a firm that does not innovate over time will fail. Thus, the challenge is to foster innovativeness to boost the economy especially when the whole word is facing instability and recessions. Therefore, continual acceleration in innovation will sustain revenue growth, which then fuels more innovation. The concept of innovation is another cornerstone in modern international marketing strategy because in today's competitive market environment many managers are concerned with the first, fast, and on-time (Vila and Kuster, 2007). Moreover, the global competition and the increase in customers' expectations had created the need for innovation and product development (Martinez-Ros and Labeaga, 2009). Motivated by the fierce competition from global market, firms started to realise the importance of innovation as the value added to existing product or service is getting eroded. It is not a must that the firm has to provide all capabilities in order to innovate but, it is enough that it has access to them (Barney, 1991).

The importance of innovation as a major factor for firm's growth was cited in many research where scholars found mixed results between innovation and other performance indicators. Innovation was found to affect profit, performance, and productivity (Lee, 2011; Thornhill, 2006; Klomp and Leeuwen, 2001; Aghion et al., 2009 cited in Andersson and Lööf, 2012). Overall, the firm's innovation enables it to better respond to external environment by adopting or implementing new product and process (Rochina-Barrachina et al., 2010; Cassiman and Martinez-Roz, 2007). Therefore, competition is one of the factors affecting innovation within firms, especially SMEs, and the flexibility of products facilitates the production of more products even quicker than competitors (Tatikonda and Rosenthal, 2000). As a result, the ever-growing literature pointed out that SMEs innovativeness contribution to the firm competitiveness and act as an initiator, catalyst, and medium for wider technical change. SMEs that are close to the market can grasp market opportunities and must be able to develop a suitable technological response. Therefore, innovation plays an important role in shaping firm's performance and growth. Studies had found that firms that innovate do perform better relative to those who do not innovate while, their performance is related to higher innovation activities (Cassiman et al., 2010) and the level of competitiveness is linked to the level of innovation. Furthermore, it could

be found that those who innovate grow better than those who did not innovate (European Commission, 2004). As the firm grows, the need to provide improved or differentiated product becomes crucial for its survival.

Given the importance and advantages of innovation, the need to study the impact of innovation on firm's growth becomes vital; therefore, the study will integrate innovation as one of the main determinants of firm growth in Egyptian SMEs. It will focus on SMEs as they are considered to be the 'backbone' of the economy and responsible for contributing to social wealth by establishing firms that provide high returns for investors, develop the country, and generate jobs which is important for boosting the Egyptian economy after the recession. Thus, this section will present an overview of the literature related to innovation and the important role it plays in firm growth. It will highlight different definitions, types, and measurements

3.3.1 Definition of Firm Innovation

There is no unified definition of 'innovation' which resulted in mixed findings. Different scholars had a different interpretation of innovation and the way it is measured. From a micro level, innovation is a management discipline which focuses on the organisational mission through searching for a unique opportunity. It determines whether it supports the organisation decision and strategic direction while considered as a measurement of success and reassessment (Lin and Chen, 2007).

Schumpeter (1934) had given the fundamentals of what can be called 'innovation theory' and provided five manifestations of innovation in his definition for innovation. His work has influenced entrepreneurship and innovation disciplines and the importance of both factors on economic growth have defined innovation in terms of:

1. The introduction of a new good, which is not familiar to consumers or of new quality.
2. The introduction of a new method of production, which is new and exists in a new way of managing a commodity.
3. The opening of new market, in which the country did not reach before and whether or not this market has existed before.
4. The introduction of a new source of supply of raw materials.
5. The creation of a new organisation of any industry such as creating a monopoly position or breaking up one.

On the other hand, OECD (2005) defined innovation as “all those scientific, technological, organisational, financial and commercial steps, including investment in new knowledge which leads to new or improved products and processes”. Moreover, it is regarded as technological, strategically or managerial tools, which is considered to be new to the firm even though it was used by others or modified for usage (Vila and Kuster, 2007) or the number of improved or new products introduced at the firm level (Hart, 2000). Johannessen and Lumpkin (2001) had reviewed literature on the definition of innovation and they summarised them in their work as follows: The European Commission defined it as “the successful production, assimilation and exploitation of novelty in economic and social spheres” while, Nohira defined it as “including any policy, structure, method or process or any product or market opportunity that the manager innovating unit perceives to be new”. Moreover, Damnpour defined innovation as “the generation, development, and adaption of novel ideas on the part of the firm”. Zaltman added that innovation is “any idea, practice or material artefact perceived to be new by relevant unit of adoption”.

In general, innovation was defined as “the successful exploitation of new ideas which involves new technologies or technological applications, which can deliver better products and services and more efficient production process and improved business models”. From the business perspective, this definition refers to improvement in firm growth; on the organisational level, innovation will yield higher profits; however, on the employees level, innovation deals with better work and skills and finally; on the consumer level, it will provide them with better quality of products and services which will increase their standard of living. A review of different definitions regarding innovation used by different authors is found in Appendix 1.1. However, in this thesis, the definition of innovation was adopted from the Oslo manual (2005) which is considered as an international basis guidelines for defining and assessing the innovation activities. Innovation is defined as ‘firm introducing any new or significant products/service, processes or/and marketing methods’. Product/service innovation refers to improving existing or creating entirely new products; while process innovation refers to any improvement or introduction of any business models, ways of working or methods for supplying goods/services, introducing computer-based production applications, automated material or introducing manufacturing information systems. On the other hand, marketing innovation refers to the introduction of new pricing methods, new distribution methods, new sales approaches or leasing agreements. The reason for using such a manual is to facilitate comparison among previous studies. Appendix 1.2 provides a review of innovation definitions and types from Oslo manual.

3.3.2 Types of Innovation

Innovation is considered as a process that brings something new to the firm, industry or the world. It could be concerned with the physical innovation such as product and process or the 'newness' of the innovation in terms of new to the industry, market, firm or the world.

Innovation could be better understood by four dimensions proposed by Vila and Kuster (2007) and Lin and Chen (2007) as follows:

1. Product innovation: is what we produce, which is due to technological innovation.
2. Process innovation: is what skills and capabilities firm possess.
3. Strategy innovation: is what the firm can do to produce it, which focuses on the measure to produce competitive advantage (for example, partnership or strategic alliances with competitors).
4. Market innovation: is concerned with the competitors and consumers and include new brand, market and sales approach.

The next section will provide a review regarding the different types of innovations studied in previous work.

3.3.2.1 Product Innovation

Product innovation is well researched in literature while, process and marketing innovation have attracted much less attention because they are intangible compared to product innovation. There is a difference between product, process, and strategy innovation which will be discussed in this section. Product innovation is what is created and strategy is what should be done to create it, while the process is concerned with the availability of resources to do that.

Product innovation refers to the introduction of new products and service to create new markets satisfying new customers. It is a form of innovation activities frequently researched due to its importance to SMEs. It helps small firms to increase their market shares and sales through increasing their customer base (Zahra and Nielsen, 2002). On the other hand, its impact on growth cannot be neglected and many authors had studied the determinants of growth in SMEs with respect to product innovation (Martinez-Roman and Romero, 2013). It was found that product innovation has a clear effect on the growth of income and employment compared to

process innovation which has an unclear effect (Fagerberg, 2004). Product and process innovation were frequently studied and were suggested to be correlated. For instance, a study done by Chinese firms revealed that product and process innovation were significantly correlated to each other, however, little is known about the direction of such relationship. It was suggested that the higher the level of process innovation, the higher the level of product innovation (Gunday et al., 2011).

In conclusion, product innovation plays an important role in the growth and competitiveness of firms. However, few studies focused on the effect of product innovation on SMEs growth in emerging economies. Realising the importance of innovation as a catalyst for competitiveness and growth, this study will address this gap by examining the effect of innovation on firm growth.

3.3.2.2 Process Innovation

Process innovation is the second important type of innovation that is frequently researched and usually studied along with product innovation. It helps improving the quality of products; thus, affect product innovation activities as well. Process innovation was found to have a significant effect on firm's operation and growth. However, the firm could imitate the process rather than developing new technological one (Unger and Zagler, 2003). Both product and process innovation are very important for firm growth (Wolff and Pett, 2006) and investment in R&D remains the most important factor affecting process innovation.

Process innovation can encompass different degrees. Johansen (1999) provided a three degree process of innovation:

a. Involves changes within the model of existing production methods and management philosophy.
b. Focuses on changes from one production method and management philosophy to new type.
c. Focuses on changes within the model of new production and management philosophy.

In summary, while most studies focused on studying product innovation because it is tangible, process innovation remains important in delivering such product. Both innovations play an important role in firm growth and development.

3.3.2.3 Organisational Innovation

Organisational innovation is another form of innovation but less visible. It is related to the administrative efforts in an attempt to improve the organisational system, procedure, process, routine while promoting teamwork, learning environment, coordination, and innovativeness (Gunday et al., 2011; Wan et al., 2005). Organisational innovation was found to increase firm performance through reducing administrative and improving working satisfaction (OECD, 2005).

3.3.2.4 Market innovation

Innovation is not related to products and processes only but marketing and organisation innovation as well. Marketing innovation is related to product innovation usually studied as product-market innovativeness and is concerned with doing something new with ideas, products, service, or technology and refining these ideas to a market opportunity in an attempt to meet market demand in a new way (O'Dwyer et al., 2009). Firms enter and exploit the targeted market by providing new techniques (Hilmi and Ramayah, 2010). Moreover, it creates new customer preference by giving information on the new benefits of the product or by teaching the customers to use it (Sandberg and Hansen, 2004).

Marketing innovation is related to market research, advertising and promotion (Andrews and Smith, 1996) the identification of new market opportunities, and entry into new markets (Hilmi and Ramayah, 2010). Through identified new or niche markets, firms launch products that are competitive by adopting new marketing programmes to promote products and services. It aims at addressing customer needs and related to pricing strategies, product packages design, product promotion, along with the 4 P's of marketing (Gunday et al., 2011). Although the product innovativeness is the main focus, the marketing innovativeness stresses on the novelty of market-oriented approaches (Hilmi and Ramayah, 2010). It was found that the higher the level of marketing innovation, the higher the level of product innovation (Gunday et al., 2011). On the performance level, a study by Hilmi and Ramayah (2010) found a positive relationship between market innovation and firm performance in Malaysian firms. It affects product consumption which in return affects the sales of the firms leading to higher profits (Johne and Davies, 2000).

Differentiating between types of innovation leads to the question, how to measure innovation in firms? Given the heterogeneous and selection criteria, Laforet (2009) highlighted some of the different measures for innovation such as the company's position in the market, percentage of

sales from their production and performance measurement in innovation. The next section will discuss different measurements of innovation and develop an appropriate measurement for this study.

3.3.3 Indicators used to Measure Innovation

Studies focusing on innovation had drawn on different measurement tools to capture the innovative activities within firms, however; there is no unified measurement for it. Moreover, it was argued that there is no difference between large and small firms in the way the measurements are conducted (Hausman, 2005). Innovation could be measured using patents output (Andersson and Lööf, 2012), R&D expenditure as a measure instead of number of patents due to its difficulty (Cefis and Marsili, 2006), or by the number of new products/service introduced (Cassiman et al. 2010; Ganotakis and Love, 2011).

The R&D expenditure is one of the earliest and most common indicators used to capture innovation activities in firms. It has been viewed as a key determinant and indicator of technological progressiveness of firms and industries which suggest that innovation starts with research leading to development, and development increases productivity. However, Kline and Rosenberg (1986) argued that it is not true that innovation is initiated by research since innovation is undertaken with the knowledge that is already available within the firm. Thus, using R&D as an indicator and measure for innovation might be misleading. Moreover, there might be a delayed effect of R&D on innovation outcome which causes a significant lag between them (Gurmu and Pérez-Sebastián, 2008).

However, it was argued that the introduction of new product is important for international competition rather than investment in R&D. Therefore, in this study innovation will be measured by the fact whether the firm introduced new or improved product, process, and marketing innovations rather than R&D. Most small firms lack resources and do not have R&D which makes it difficult to capture any innovation activities. This is the case in the Egyptian SMEs where the majority of the innovative small firms did not have R&D department. The sample used in this study consisted of 406 SMEs, from which only 32 firms were found to have an R&D department representing 7.9% of the total sample and were located in the high-technological industries such as the chemical, engineering/electric/electronic, and pharmaceuticals/cosmetics industries. Thus, innovation will be measured by taking a simple binary variable (does the firm

innovate or not), where 1 is for those firms that are innovating and 0 for those who are not engaged in any innovative activities.

3.3.4 Importance of Innovation Activities in SMEs

Innovation is considered to be an important ingredient in today's business world and a cornerstone for firm growth. It is an important vehicle for small firms and those encompass it will excel in the competitive business environment and those who do not embrace it will not survive or grow. Therefore, in order to survive and grow, small firms have to innovate and compete with large firms while exploring more opportunities in foreign markets. Innovation has been considered as a generator of competitiveness enabling firms to perform well and fuels them for future success (Neira et al., 2009 ; Lin and Chen, 2007) but, it needs a supportive environment for innovative firms to benefit from its returns such as openness to knowledge and networking (Williams and Shaw, 2011; Xie and Li-Hua, 2008). With high unemployment rate and the increase in downsizing of larger firms, SMEs started to play an important role in the economy to absorb unemployment (Feindt et al., 2002). As a result, studying SMEs growth and innovation had attracted many scholars to investigate and examine.

The importance of studying innovation in small firms is that most innovative firms outperform those who are not innovative in their performance, growth, and profitability (Freel, 2000). Not only innovative firms exert a positive effect on growth, profitability, and performance of firms; there is a positive relationship between product innovation and growth in employment (Freel, 2000). Highlighting the importance of innovation on firm growth and employment encourages this research to investigate the effect of innovative firms on the growth of Egyptian SMEs as well as studying its impact on exporting.

Empirical research is inclusive on the relationship between innovation and firm performance (Ortega-Argiles and Moreno, 2005). In turn, small firms were found to have a high contribution to innovation and technological changes which affect their growth (Freel, 2000). A large number of studies examined the innovation-performance relationship and found that innovation enhance the production, market, innovation and financial performance of firms (Ngugi et al., 2013; Mansury and Love, 2008; Antoncic and Hisrich, 2001; Hult and Ketchen, 2001). Moreover, a study done in Iran by Zangoueinezhad and Moshabaki (2009) found that operational, managerial, and organisational processes significantly affect the innovation activities of firms which affected their performance. However, the study had limitation as it studied this in large

firms and not on SMEs. Another study was carried out on Turkish SMEs to investigate the impact of innovation on their performance which found that SMEs growth was significantly affecting innovation performance in a positive way (Zerenler et al., 2008).

Moreover, innovative activities among small firms are associated with growth whether in employment, turnover and output in small firms. It was found that innovation performance is linked to the increase in sales and market share, since a new product success affects customers' satisfaction (Wang and Wei, 2005). Furthermore, a positive relationship between firm innovation and growth was found (Roper, 1997; Ganotakis and Love, 2012). However, Cooke and Clifton (2004) found a weak relationship between different types of innovation such as radical and incremental, product and process innovations on employment, turnover and profit growth; while Freel and Robson (2004) found a negative relationship between product innovation and growth in sales.

In conclusion, "innovation is an essential condition of economic progress and a critical element in the competitive struggle of nation states" (Freeman and Soete, 1997: 1). It is a complex phenomenon which is associated with the degree of novelty (Martinez-Roman and Romero, 2013) and considered as an important internal capability which was rooted in the evolutionary economics. The evolutionary economics highlighted the importance of innovation in creating knowledge thus, leading to the development of organisational capabilities which will consequently affect its performance especially in highly competitive environment (Nelson and Winter, 1982). It is connected with improved firm performance in terms of profitability, productivity, and growth (Tidd, 2001; Cefis and Ciccarelli, 2005, cited in Love et al., 2009). However, the debate on the relationship between innovation and growth had resulted in the need for more studies examining the relationship between innovation and growth as growth is connected with firm's innovation activities (Verhees et al., 2010; Storey, 1994).

As it has been discussed, there is a large literature on the relationship between innovation and growth in SMEs; however, there is scarcity of studies on Egypt as a developing country. In this sense, this study will aim at examining the effect of innovation on growth in Egyptian SMEs which leads to the development of the following hypothesis:

H2: Innovation activities significantly affect SMEs growth positively.

3.4 Innovation and Exporting Activities in SMEs

Many studies underlined the importance of exporting and innovation activities for the growth of countries and industries. On the other hand, SMEs have not bounded anymore to their domestic markets thus; they constantly integrate innovation to compete both domestically and internationally. They are considered as key players in international markets and innovation is one of the avenues for building competitive advantages. The market opportunities depend greatly on the firm's innovativeness and ability to provide new products or process (Sternberg and Arndt, 2001). However, the decision to innovate and export is a complex process in which many factors are underlying. Although, innovation and exporting are not new phenomena and were extensively studied, there is lack of studies regarding this relationship in Egypt. Thus, the main aim of this section is to examine the effect of innovation on exporting activities in Egyptian SMEs.

A key question faced by policy makers is how to improve the exporting activities of SMEs in order to sustain growth. As Egypt is suffering from 'missing middle', high unemployment and a decrease in its foreign reserve, the need to foster exporting behaviour in SMEs becomes vital. Exporting contribute positively to the economic growth of countries as it enables the flow of income into the economy, increases wealth and standard of living, and leads to high-value added activities. Its importance could be reflected on the microeconomic level such as the improvement of firm's financial position, enhancement of its management skills, and achievement of competitive advantage. While, on the macroeconomic level, exporting creates jobs, enhances the development of new technologies, provides source of foreign exchange, and overcomes deficit (Amarasena, 2013). Another benefit from exporting is the scale effect which is the result of the extension of market over which margin may be earned thus, decreases the costs of the firm and therefore, provides an incentive for it to invest in R&D and innovate (Aw et al., 2008 cited in Love and Ganotakis, 2013).

On the other hand, innovation is consistently found to be the most important factor associated with success, and a generator of competitiveness which leads to superior performance (Ahuja and Katila, 2004; Dibrell et al., 2008) while improving financial performance (Zahra et al., 2000). It is an ingredient for those who want to remain competitive (Darroch and McNaughton, 2002; Shefer and Frenkel, 2005) which encompasses determining the needs and wants of the market. Firms have to scan for new opportunities and provide solution to those market needs in order to better address the demand of customers. One of the potential reasons for the effect of innovation on exporting is that innovation increases productivity enabling firms to overcome sunk

costs associated with exporting activities. Therefore, the firm is self-selected to the international market which was supported by empirical studies that found difference in productivity between exporting and non-exporting firms (Wagner, 2012; Greenway and Kneller, 2004).

On the other hand, globalisation has fostered small firms to engage in international marketplace which highlights the importance of studying exporting behaviour in SMEs. Most SMEs prefer exporting as an entry mode since it is the most common and straightforward strategy to reach international market (Morgan et al., 2012; Mittelstaedt et al., 2003) although, it is not easy as it requires more resources and risks (Czinkota and Ronkarneir, 2009). Exporting was found to bring innovation to the firm by being exposed to international market. However, for a firm to perform well, it has to provide superior innovation that enables it to enter new market. The relation is said to run from being innovative to entering new market (Martinez-Ros and Cassiman, 2007) while other studies suggest a reverse direction. According to the product life-cycle by Vernon (1966), small firms that possess an innovative product at the early stage will try to export their product as the domestic market is saturated. Thus, innovation is thought to affect exporting behaviour in small firms. Meanwhile, Klepper (1996) found that different types of innovations affect different stages in the product life cycle as product innovation was associated with early stages while process innovation is associated with later stages.

In conclusion, the link between exporting and innovation activities has received a great deal of interest. However, despite the number of determinants in which exporting behaviour has been investigated, innovation received little attention in developing countries. Therefore, the aim of this section is two folds: firstly, it will review the literature and theories regarding the relationship between innovation and exporting and secondly, it will examine the effect of innovation on firm's exporting in Egypt to address this gap.

3.5 Theoretical Framework

The relationship between innovation and exporting activities was addressed in several theories and models. The next section will discuss the theoretical framework underpinning the relationship between innovation and exporting activities in firms.

3.5.1 The Theory of International Product Life Cycle (IPLC)

The International Product Life Cycle (IPLC) was developed by Vernon in 1966 in an attempt to explain the internationalisation of U.S. manufacturing firms. It describes the international expansion of firms and their movement along the life cycle stages as a result of innovative activities (Vernon, 1966, 1979). The innovation activities carrying out in the domestic market is a method to explore and engage in an international market opportunity. Vernon (1966) described the firm internationalisation activity as moving from exports to foreign direct investment (FDI) in stages focusing on technological innovation and market expansion. Meanwhile, Raghavan (1995) identified three stages of product life cycle namely: new product, maturing product and standardised product.

At the new product stage, the IPLC aims at satisfying the needs or even exceeding the expectations of high-income consumers. The new innovative product is sold domestically which benefits the inventor both by enjoying being a monopoly of the product and by reaping the profits. Once the product succeeds domestically, firms start exporting their innovative product to similar countries. The reason for exporting to similar countries in terms of culture and economic conditions is to reduce the risk of failure (Vernon, 1966).

The next stage is the maturing product stage, where the product starts maturing and moves along the IPLC. The demand for the product starts to increase as more consumers are aware of it, leading the foreign competitors produce and imitate the product's innovative technology (Poh, 1987). Afterwards, the product moves onto another stage "standardised product stage" where competition starts to increase.

As a result, it has been found that technological innovation and market expansion are central to this theory. They explain the trade patterns in the process of market expansion. According to life cycle theorists, innovation tends to increase during the early stages of firms but, slowly decreases during the later stages. In conclusion, the IPLC is important in describing the establishment of firms and their exploitation in foreign markets. The major factor for the internationalisation of firms is 'innovation', as a mean of competitive advantage to exploit foreign market opportunities.

3.5.2 Innovation-related Model (I-M)

The 'innovation model' is similar to the Uppsala model and suggests that internationalisation results from a series of management innovations within the firm that evolve as learning stage (Bilkey and Tesar, 1977). Most of the I-models are restricted to SMEs and used cross-sectional approach (Andersen, 1993). It appeared in North America in the late 1970's and early 1980's (Reid, 1981) and looks at the internationalisation process as an innovation to firms. It was considered so because turning an established domestic firm into an international active one is an innovative and challenging process (Fillis, 2001). The innovation-related theory considers the internationalisation process of firm as an innovation requiring proactive approach (Reid, 1981) as this shift will require a change in network ties, organisational routines, capabilities and skills to customise its product in order to adapt to foreign market. On the other hand, the process of internationalisation requires innovation and a "Firm Champion", who will direct the firm to take a step towards international market. It was suggested that for a firm to move from one stage to another it has to be innovative (Bilkey and Tesar, 1977; Cavusgil, 1980; Reid, 1981, Grankema et al., 2000). Moreover, Roger (1962) initial work regarding innovation-related internationalisation regards the entrepreneurial decision to engage in international market as an innovative decision. However, an innovative culture could speed the internationalisation activity of small firms (Fillis, 2000). Furthermore, it was found that firms which provide innovative product enter and develop international market easier and faster than those who do not (Fillis, 2000). Although the model focused on the importance of internationalisation and considered it an innovative step, its strength is derived from its simplicity.

3.5.3 The Resource-Based View (RBV)

The Resource-Based View (RBV) is considered to be the most influential theory in business strategy and international business research (Newbert, 2007; Peng, 2001). It focuses on the sustained competitive advantage of the firm as a result of its unique resources and capabilities and considers it as a bundle of heterogeneous resources. It also explains how firm's capitalise on its internal resources by acquiring and developing a unique resource enabling competition in international market (Ruzzier et al., 2006). Thus, explaining the role of innovative culture, knowledge and capabilities of the firm (Penrose, 1959; Wernerfelt, 1984; Barney, 1991).

RBV has gained support due to the limitation of stage theories, as traditional internationalisation stages failed to explain the rapid internationalisation activities of small firms. Evidence was found to support the early internationalisation of small firm which is known as 'born global' (Oviatt and

McDougall, 1994; Knight and Cavusgil, 2004). Thus, the RBV stresses on the role of resources and unique capabilities in explaining the rapid internationalisation of small firms (Knight, 2004). Several approaches were developed stemming from Penrose work (1959) such as the evolutionary approach (Nelson and Winter, 1982) and resource approach (Barney, 1991) to define the firm's resources and connect it with their competences. It is the most important theory in international business research rooted from Penrose work (1959).

The resource-based view was used to highlight the importance of innovation as a source of competitive advantage which facilitates firm's exporting activities. It is an influential theoretical framework for explaining why firms perform differently (Hitt et al., 2001). Moreover, it highlights the importance of innovative capabilities as a source of a long-term competitive advantage for firms operating in international markets (Alvarez, 2004). It indicates that the competitive advantage resulted from the firm's strategic resources which are related to firm-specific assets, such as technological, organisational, human capital, will affect the exporting behaviour of firms. Therefore, the export success of SMEs comes from their resources and capabilities (Wernerfelt, 1984; Barnet 1991). A conceptual model was developed by Rodriguez and Rodriguez (2005) to illustrate the impact of technological resources on firm's exporting behaviour (see Figure 3.2)

Figure 3.2 - Technological Resources and Export Behaviour: A Conceptual Model

Source: Rodríguez and Rodríguez (2005)

Furthermore, the RBV provides an insight into small firm's internationalisation activities highlighting the importance of resources for rapid process and growth (Loane and Bell, 2006; Morgan et al., 2006). It is important for SMEs to capitalise on internal resources and acquire external unique ones for their internationalisation process (Westhead et al., 2001). The

heterogeneity and unique resources create a competitive advantage that is considered to be valuable, inimitable, rare, and non-substitutable (Barney, 1991). Thus, it is important to understand and examine the role of resources in motivating firms to internationalise which, is highlighted in the RBV (Loane and Bell, 2006; Ruzzier et al., 2006). Under the RBV, physical, human, and organisational assets are resources that could be utilised to create competitive advantage. Williamson (1975) divided resources into tangible and intangible resources. Tangible resources are the physical resources which include access to plants, equipment, technology and raw materials. Meanwhile, intangible resources could be human and capital resources. Examples of human resources are experience, knowledge, relationships, training, judgement, intelligence, and the managers' vision in a firm. While reporting system, planning, processes, control, coordination system, organisational structure, information relations among workers within the firm, between a firm and its environment are examples of organisational capital resources. The physical and organisational resources could be easily imitated once recognised as valuable to the firm's activities contrary to human capital resources that are rare and hard to be transferred to other competitors. This is why human capital is regarded as a strategic resource (Barney, 1991). Small firms recognise the intangible resources as important for their early internationalisation since they could not afford to compete with large firms who have better access to tangible resources (Peng, 2001). Accessing such resources facilitate the growth in the number of born global firms while sustaining competitive advantage (Knight and Cavusgil, 2004). Thus, one of the main variables that affect internationalisation process of small firms is resources and once secured they could compete in global marketplace (Westhead et al., 2004).

Moreover, the concept of resources and competencies could include firm characteristics, such as costs of production, innovation or entrepreneurial characteristics such as age, network relations and experience (Ruzzier et al., 2006). However, it was found that entrepreneurial resources and competencies play an important role in exploiting opportunity in foreign marketplace (McDougall and Oviatt, 2000). These resources could act as an internal antecedents and factors affecting the internationalisation process of SMEs and although small firms may suffer from technical, financial, and human resources, they could access other intangible resources that facilitate their international activities (Varma, 2011).

In summary, the RBV highlights the importance of resources in the internationalisation process of firm and allow for an explanation of how a firm's competitive advantages play a role in its expansion. This view plays an important role in the growth and internationalisation of small and medium-sized firms where innovation affects their exporting behaviour.

3.5.4 'Neo-Endowment' and 'Technology-Based' Models

The two main conceptual approaches that model the determinants of export performance are 'neo-endowment' and 'technology-based' model (Ganotakis and Love, 2012b). The 'neo-endowment' model states that the firm's competitive advantage is based on factor endowment while, 'technology-based' model considers competitive advantage as a result of firm's products or service quality (Ganotakis and Love, 2010; Roper et al., 2006). The neo-factor endowment and neo-technology theories of international trade have provided the theoretical framework for most of the exporting-performance relationship studies. According to the neo-classical or Heckscher-Ohlin model of international trade, factor endowments are the key determinants of trade but, technology has no effect since it is freely available to all. Therefore, Grossman and Helpman (1991) and Vernon (1966) accounted for this by postulating the neo-technological models. The technology-based models of international trade Posner (1961) and Vernon's product life cycle (1966) highlight the importance of innovation as a key driver of exporting (Roper and Love, 2002). It emphasises on the role of technology in explaining trade and how new product innovation, by developed countries, and process innovation for imitating those products, by developing countries, may lead to trade (Grossman and Helpman, 1991). It is the highly technological products that will cross the borders and enter foreign markets. Thus, firms invest in implementing new technologies or developing new products or process (Roper and Love, 2001) as it is considered an important element in firm's trading and competitiveness (Hughes, 1986).

The neo-technology model predicts innovative industries to be exporters (Greenhalgh et al., 1994). It is considered to be an extension to technology-based models such as Vernon (1966) product life cycle theory and the technology-gap theory of trade (Posner, 1961). On the other hand, the neo-endowment model concentrates on specialisation on the basis of factor endowments, such as materials, labour capital, knowledge and human capital (Wakelin, 1998; Roper and Love, 2002). Both approaches suggest that the direction runs from innovation to exporting. However, Grossman and Helpman (1991) endogenous growth models suggest that the direction could run from exporting to innovation (cited in Ganotakis and Love, 2011). According to endogenous growth theory, export performance is dependent on the technological competitiveness, which in turn is dependent on the level of innovative activities (Grossman and Helpman, 1991). It was argued that when firm start exporting, they get exposed to new technologies which are brought back to the firm. Moreover, the learning-by-exporting effect may enhance their innovativeness.

3.5.5 Self-Selection and Learning-by-Exporting

Exporting and innovation activities are two of the most important factors determining the firm's success in today's economy. Firms have to consider both simultaneously when trying to grow and interact in foreign markets. While exporting is considered to be an important element in firm growth, innovation was found to be an important determinant for it. The impact of innovation on exporting has been studied earlier by Posner (1961) who found that exporting was linked to the technological gap between countries. Vernon (1966) argued that innovation performance of firms and countries determines their export performance yet, the relationship between exporting and innovation remains complex. There are strong arguments about the causation and direction of both (Beveren and Vandenbussche, 2010; Golovko and Valentini; 2014, Ottaviano and Martinus, 2009; Lecerf, 2012; Roper and Love, 2002; Ganotakis and Love, 2011). Studies argued that it could move from innovation to exporting and/or exporting to innovation. The more innovative firms can better compete in the foreign market due to the unique product they offer thus, increase their exporting activities. On the other hand, those firms that are exposed to foreign market can gain more knowledge about the market and customers which, in return affect their innovative process. This debate has led to the development of two important approaches that literature had studied: 'self-selection' and 'learning-by-exporting'.

Scholars have studied the relationship between innovation and exporting. Love and Mansury (2009) and Ganotakis and Love (2011) integrated the learning–by-exporting and self-selection approaches to investigate the causation between innovation and exporting. Numerous studies had found that exporters are more productive than non-exporters within the same industry (Greenway and Kneller, 2004; Wagner, 2012; Bernard et al., 2007). This was accounted for due to the self-selection mechanism and learning-by-exporting. A review done by Wagner (2007) for the period 1995-2006 on fifty empirical studies found an evidence for the self-selection mechanism (Love and Ganotakis, 2013). Self-selection (causation runs from innovation to export) occurs when the most productive firms can overcome their high cost of exporting. There is a sunk cost of becoming an exporter due to the costs of market research, modifying products, negotiating with customers, setting up new distribution channels which all imply costs (Love and Ganotakis, 2013). Therefore, only those who are more productive will be able to export, which makes exporters more productive than non-exporters. Through exporting, firms are exposed to fierce competition and are encouraged to be innovative in order to remain competitive in the market or otherwise they will fail (Greenway and Kneller, 2007). Therefore, it was argued that those who are productive possess a competitive advantage that enables them to be more productive and thus, be self-selected to enter foreign markets.

In summary, previous studies had found that innovation activities positively affect exporting and that the direction goes from innovation to exporting (Aw et al., 2009; Filipescu et al., 2009; Harris and Li, 2011; Lenoidou et al., 2007; Roper and Love, 2002; Rodríguez and Rodríguez, 2005; Pla-Barber and Alegre, 2007; Cassiman and Martinez-Ros, 2007; Becker and Egger, 2009). Meanwhile, a study on a sample of Italian firms found that those who introduce product and/or process innovation are more likely to export (Basile, 2001). Moreover, a study done on 2,019 German firms found that exporter is strongly correlated with being innovative (Alvarez, 2007). While, Cassiman and Golovko (2007) found that innovation drives productivity when testing the innovation, productivity and exporting relation but, once controlled for innovation, export and productivity are not related to innovating firms.

On the other hand, learning-by-exporting (causality runs from exports to innovation) affect the performance of the firm positively as exporters get exposed to foreign markets where they learn from (Meltiz, 2003; Yeaple, 2005). Firms that export are able to accumulate new knowledge which leads to firm's innovativeness (Boermans and Roelfsema, 2015b). They gain access from two types of knowledge: marketing and technological knowledge which help in increasing productivity (Salomon and Shaver, 2005a). As a result of firms reaching foreign market, they can take advantage of their economies of scale and acquire knowledge from market thus, fostering learning. A study on Spanish manufacturing firms found evidence in favour of learning-by-exporting (Salomon and Shaver, 2005a) it was found that exporting increases the innovativeness of firms. Through knowledge, firms will gain more knowledge about markets which in return improve their innovativeness (Kafouros et al., 2008; Rodríguez and Rodríguez, 2005; Alegre and Chiva, 2008; Kotabe et al., 2002; Salomon and Shaver, 2005a). As international market is characterised by a greater competitive pressure thus local firms should provide a unique product or service in order to compete locally and globally (Eusebio and Rialp, 2002, cited in Rodríguez and Rodríguez, 2005). They produce more product innovations quickly after entering the market due to market knowledge gained from being exposed to international markets. As a result, this leads to the improvement and development of products (Salomon and Shaver, 2005b) this is called leaning by doing effect. Since exporters are exposed to an intense competition they must provide innovative products which could be radical and incremental to be able to compete in international market (Yeoh, 2004, cited in Love and Ganotakis, 2013).This competition will lead to improving productivity compared to those operating in domestic markets. Thus, this explains why internationally engaged firms are more productive than domestic firms, although there are mixed results (Wagner, 2007; Greenway and Kneller, 2007). Moreover, scholars found mixed results regarding the effect of exporting on firm's productivity. While some

authors found a positive relationship (Love and Mansury, 2009; Aw et al., 2007; Zucchella and Siano, 2014) others found no evidence (Greenway et al., 2007; Castellani, 2002) for this relation. However, exporting is regarded as an important element in boosting innovation capacity of firms through the access to professional and technical expertise that provides a channel of technology and learning (Love and Ganotakis, 2013).

In this sense, the importance of examining the effect of innovation on exporting is central for policy makers to develop more policies aiming at fostering innovation in small firms. The purpose of such policies is to stimulate productivity. Non-innovators were found to have less incentive to export (Martinez-Ros and Cassiman, 2007) therefore, for firms to grow they must innovate and export. A literature review on similar studies was done by Martinez-Ros and Cassiman (2007) which supported the relationship between innovation and exporting. In addition to that, recent empirical studies focusing on the effect of introducing product and process innovation on exports found that innovation influenced the internationalisation activities of firms (Love and Roper, 2015; Wakelin, 1998; Roper and Love, 2002; Cavusgil and Zou, 1994). Furthermore, a study done on Spanish firms found that innovation positively affects exporting and that innovators are more likely to export due to the profit achieved from exporting (Caldera, 2010). Moreover, a study on Campania region found a positive relationship between innovation and internationalisation in SMEs (Zucchella and Siano, 2014).

Undoubtedly, innovation is an important factor in entering and remaining in international market. It enables firms to target new markets especially niche markets for small ones by providing new or improved products or services (Autio et al., 2000). On the other hand, it is considered as one of the important determinants that affect SMEs' exporting activities. This relationship between innovation and exporting has been mainly investigated at a macro-economic level. While innovation provides industries and countries competitive advantage, its impact on the micro-level could be realised as firms provide innovation that improves their performance, build competitiveness, and sustain economic growth (Cassiman and Martinez-Ros, 2007). As a result, there is a need to understand the determinants of firms exporting activities focusing on their innovation capabilities as a key driver for exporting (Leonidou et al., 2007; Cassiman and Martinez-Ros, 2007). Thus, the need to examine this relationship in the Egyptian context as an emerging economy will add to the stream of literature and enable comparative studies. Egypt's economy is affected dramatically after the revolution and the need to export becomes the focal point of the government. Due to the economic situation, firms have difficulty in selling their

products in the market. Therefore, encouraging firms to export will positively affect both the firm and the country. Therefore, a third hypothesis is developed to reflect this gap:

H3: Innovation activities significantly affect SMEs exporting activities positively.

However, previous studies have pointed out the problem of endogeneity between innovation and exporting (Lachenmaier and Wößmann, 2006; Nguyen et al. 2008; Ganotakis and Love, 2010; Higon and Driffield, 2010). There might be an unobserved effect that influence both exporting and innovation thus, instrumental variables (IV) estimation will be used to model the relationship between innovation and exporting for any potential endogeneity between exporting and innovation. It will adopt similar approach to (Higon and Driffield, 2010; Nguyen et al., 2008) involving the use of instrumental variables by incorporating an instrumental variable approach. This approach will be discussed in chapter 6 in details. The IV identifies those variables that are highly correlated with innovation but not with the error term. Ganotakis and Love (2010) used three variables which are the internal R&D expenditure as percentage of total expenditure, any government support, and formal collaboration agreement of a technical nature. On the other hand, Higon and Driffield (2010) used the 'business new products' and 'business reinvest' while Nguyen et al. (2008) identified the number of employees having college education, awareness of owners regarding difficulty of lacking skilled workers, training activities, investment strategy, investment in replacing equipment, investment in improving productivity and develop new products. In this study the only variable that was highly correlated with innovation and not the error term was the government support. Therefore, this variable will be used in addressing the endogeneity problem. Thus, it will add to the literature by allowing endogeneity between innovation and exporting activities.

The next section will present the research model and hypotheses developed from previous debates which will significantly contribute to the stream of literature.

3.6 Proposed Research Model and Hypotheses

A proposed model for the study is presented in Figure 3.3 while the research hypotheses are presented in Table 3.1.

Figure 3.3 - Proposed Research Model

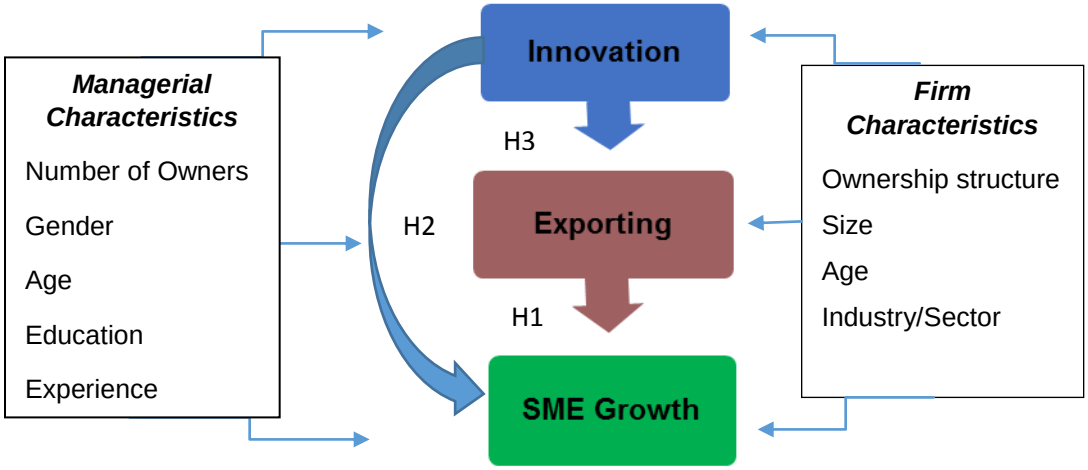


Table 3.1 - The Research Hypotheses

H1: Exporting activities significantly affect SMEs growth positively.
H2: Innovation activities significantly affect SMEs growth positively.
H3: Innovation activities significantly affect SMEs exporting activities positively.

3.7 Chapter Summary

Realising the importance of exporting and innovation activities in boosting the economy and as determinants of growth, this study aims to examine this relationship in Egypt since it suffers from both 'missing middle' and economic situation. Thus, it is of great significance to examine the role of exporting and innovation as determinants of growth. This chapter is divided into three sections, namely 'export and growth', 'innovation and growth', and 'innovation and exporting activities' in SMEs. Each title developed a review on literature regarding its determinants and arguments resulting in the formulation of three main hypotheses.

The first section addresses the 'exporting and growth' relationship. It reviewed the definitions of exporting activities in small firms. Since exporting plays an important role in firm growth and creates a channel for firms to gain access to technological support and knowledge from partners

in different countries this study will focus on the significant effect of exporting on firm growth in SMEs.

The second section addresses the ‘innovation and growth’ relationship. It identified different types of innovation, and definitions used in the study. Innovativeness is one of the main elements of firm growth. It provides the firms with a competitive edge that enables them to enter new market by increasing their existing market share. Its importance is reflected on its strategic orientation that it develops in order to overcome the barriers faced while achieving sustainable competitive advantage. Therefore, the second hypothesis aims at examining the significant effect of innovation on SMEs growth.

The third section addresses the ‘innovation and exporting’ relationship. There has been an extensive research regarding the relationship between exporting and innovation, however, all these studies focused on developed countries ignoring emerging economies such as Egypt. The need to develop more studies regarding the relationship between innovation and exporting is needed to facilitate future comparative studies among developed countries. Therefore, the third hypothesis was developed aiming at examining the significant effect of innovation on SMEs exporting activities. Moreover, the study addresses the endogeneity problem resulted from innovation-exporting study.

With reference to the product life cycle, RBV, I-M, neo-endowment and technology endowment theory a proposed model was developed which integrates the three variables. The chapter then concludes with the proposed model and hypotheses to examine. The next chapter will present the research design and methodology for this study.

Chapter 4: Research Design and Methodology

4.1 Introduction

This chapter presents an overview of the research philosophy, methodology, and design used to undertake the study. It uses the conceptual framework discussed earlier in conjunction with SMEs literature to examine the determinants of growth in the Egyptian SMEs. As many studies highlighted the importance of manager and firm characteristics as determinants of SMEs growth, this study will focus on exporting and innovation activities due to their importance (Lööf et al., 2015; Damijan and Kostevc, 2015; Love and Roper, 2015; Zucchella and Siano, 2014).

The methodology discussed in this chapter is based on the theoretical framework for SMEs growth, exporting, and innovation activities presented in Chapter 2 and 3. It is designed to investigate the nature of hypotheses discussed in Chapter 3. Chapter 4 provides a detail on: (1) research paradigm; (2) research philosophy; (3) research strategy; (4) research design; (5) types of questionnaires used; (6) research constraints; (7) questionnaire development and cover letter, including content, pre-test study, forward and backward translation; (8) sample design and sampling procedures, including target population, sample frame and data collection process; (9) validity and reliability; and (10) ethical issues.

Literature highlighted the importance of exporting and innovation on SMEs growth. However, the lack of studies regarding emerging countries, such as Egypt, does not fully explore the nature of this relationship. Therefore, the main objectives of the empirical research are to examine:

- The significant effect of exporting on SMEs growth in Egypt.
- The significant effect of innovation on SMEs growth in Egypt.
- The significant effect of innovation activities on SMEs exporting activities in Egypt.

4.2 Research Paradigm

A paradigm is a broad framework which comprises perception, beliefs, and understanding of several theories including philosophies and methods. The research paradigm is affected by the researcher's way of thinking and knowledge (Collis and Hussey, 2003) which impacts the decision of methods and tools used in research. There are two major research philosophies that were mentioned by scholars in the 20th century: the positivist and the phenomenology

philosophies. The positivist approach adopts a philosophical stance of the natural scientist that depends on observable research which could be generalised (Saunders et al., 2003; 2009). It tries to apply principles and methods of natural science to study the social behaviour of participants by understanding and explaining reality (Collis and Hussey, 2003). Positivism "views all true knowledge is scientific and is best pursued by scientific method" (O'Leary, 2010: 6). Unlike the empiricism which views "all knowledge is linked to what can be observed through the senses" (O'Leary, 2010: 6).

The positivist approach has the following advantages:

- They are suitable for research projects that are descriptive in nature such as identifying and quantifying the elements of the phenomena understudy.
- It is easier to be tested by other researchers.
- The standardisation enables an easier gathered codified data.

Alternatively, there is the phenomenology philosophy which tries to understand human behaviour from the participant's stand and interprets meaning through which respondents view the world (Collis and Hussey, 2003). This paradigm was developed in an attempt to suggest that reality is socially constructed rather than externally determined therefore, people's mindsets and experience should be understood (Saunders et al., 2009). Phenomenology enables the understanding of the 'how' and 'why' derived from participant's experience but, the data collection is time-consuming and difficult to analyse. Unlike positivism, phenomenology is associated with qualitative research methods with small sample size. Table 4.1 provides a comparison by Collins and Hussey (2003) summarising the difference between the two paradigms.

Table 4.1 - Characteristics of Main Paradigms

Positivism Paradigm	Phenomenological Paradigm
Produce quantitative data	Produce qualitative data
Tests the hypothesis (deductive)	Generates hypothesis (inductive)
Could be generalised	Generalisation differs
Large sample size is used	Small sample size is used
The data generated is precise and specific	The data generated is rich and subjective
Reliability is high	Reliability is low
Validity is low	Validity is high

Source: Collins and Hussey (2003)

Given the research objective of this study, the positivist stance offers an opportunity to test the determinants of growth in the Egyptian SMEs using a large sample of SMEs. According to Wicks and Freeman (1998), the positivistic approach is based on three assumptions as follows:

- The first assumption: is finding facts and laws that govern how things work in the world, which is the role of the researcher.
- The second assumption: is documenting and describing the facts.
- And finally, the use of scientific methods which allow researchers to examine the hypotheses understudy and depend on objective measures through data collection to support findings. Through the use of the quantitative method, data collected could be generalised and replicated in future research.

4.3 Research Philosophy

Philosophy refers to the development of knowledge which contains an important assumption about how scholars view the world (Saunders et al., 2009) while underpinning the research strategy and methods for understanding research. It is defined with the help of research paradigm and all theories in the social science discipline are derived from a philosophical paradigm which differs from one another according to the researcher's view. Understanding different views of philosophies provide direction for designing the research study while increasing the awareness of approaches for better research. Therefore, this section will examine the research philosophy underpinning the study which is considered to be an important way in viewing, understanding, and investigating the world. It will provide a better understanding of these paradigms and the best appropriate approach for this study. There are the ontology, epistemology, and axiology philosophies that are mainly used for the research process. According to Saunders et al. (2009), ontology is the theory of being which has strong implications for the conceptions of reality. It is mainly concerned with "the researcher's view of the nature of reality or being". Hence, the researcher either perceive the world as objective and can be externally explained or as socially constructed through understanding human perception. It is the reality that researcher tries to investigate. On the other hand, epistemology is defined as "the researcher's view regarding what constitutes acceptable knowledge", that is the relationship between the researcher and reality. Finally, there is axiology which refers to "the researcher's view of the role of values in research" (Saunders et al., 2009:119). Table 4.2 shows a comparison between different paradigms.

Table 4.2 - Comparison between the Main Paradigms

Assumption	Question	Quantitative	Qualitative
Ontological	What is the nature of reality	Reality is objective and singular apart from the researcher	Reality is subjective, and multiple as seen by participants in a study
Epistemological	What is the relationship of the researcher to that researched?	Research is independent from the researcher	Researcher is involved in the research
Axiological	What is the role of values?	Value-free, unbiased	Value-laden, biased
Rhetorical	What is the language of research?	Formal, based on set definitions, impersonal voice, and use of accepted quantitative words.	Informal, evolving decisions, personal voice, accept qualitative words.
Methodological	What is the process of research?	Deductive process, cause-effect, context-free, generalisations, accurate and reliable through validity and reliability.	Inductive process, theories developed for understanding, accurate, and reliable through verification

Source: Saunders et al. (2009)

In this study, the overall aim of the research is to examine the determinants of growth in the Egyptian SMEs with regards to exporting and innovating activities while examining the effect of innovation on firm exporting activities. Based on this stance, the ontology of the research will adopt a positivism approach which explains its objective as external to the researcher and independent from its social setting. Whereas, the epistemology of the research is adopting the positivist approach, based on external constructs and quantitative data, which depends on the results of data analyses. The epistemology was explanatory, trying to explain reality based on positivist ontology while, the methodology used was quantitative based on the positivist paradigm. The positivism philosophy uses the quantitative methods to test hypothetical deductive generalisation. The paradigm assumes reality as objective and researcher is not involved in research, reflecting the independence of observer and the data is seen unbiased (Amaratunga et al., 2002; Saunders et al., 2009). On the other hand, the methodology used involves statistical sampling techniques that examine a sample of a larger population through the use of quantitative approach.

In small business research, the owner's attitude to growth is context-dependent which is affected by other factors such as market conditions, skills, education, personality, motives, and many other (Bridge et al., 2003; Curran and Blackburn, 2001). While some factors are easily measured, such as owner and firm characteristics, there are other factors that are difficult to measure such as the owner's motivation in pursuing growth (Barkham et al., 1996). However,

most research into small firms has their roots into the positivist paradigm which could produce a greater understanding of factors affecting small firm growth.

4.3.1 Deductive-Inductive Approaches

Research based on positivist view applies a deductive approach in testing theories while finding a relationship between theory and research (Bryman and Bell, 2007). The deductive approach aims at "testing the conceptual and theoretical structure using empirical observation" (Collin and Hussey, 2003: 15). Hence, it is important to design a research strategy to test the hypotheses developed from the theory, unlike the inductive approach that depends on data collection for developing a theory (Saunders et al., 2009). A comparison was made between the deductive approach that stems from the positivism paradigm and the inductive approach stemming from the phenomenological paradigm which is highlighted in Table 4.3.

Table 4.3 - Difference between Deductive and Inductive Approach

Deductive	Inductive
-Scientific principles	-Gaining an understanding of the meanings
-From theory to data	-Humans attach to events
-Explains causal relationships between variables	-Understanding the research context closely
-Uses quantitative data	-Uses qualitative data
-Large sample for generalisation	-Less concern about generalization
-Researcher is independent from study	-Researcher is involved in the study
-Approach is highly structured	-Flexible structure for changes
-Applying controls for validity need	

Source: Saunders et al. (2009: 127)

Given the difference between deductive and inductive approaches, this study will utilise the deductive approach. It will elaborate on the hypotheses and compare them against particular reality to assess the research objectives. Although the literature had extensively studied small and medium-sized firm performance and growth, the impact of exporting and innovation activities on firm growth remains under-investigated in the Egyptian context; as well as the effect of innovation on firm exporting behaviour. Moreover, there is a scarcity of research on SMEs in Egypt regarding their exporting, innovation, and growth patterns which are important to answer the 'missing middle' phenomena. To fill the research gap, this study aims at examining the

determinants of growth in Egyptian SMEs with respect to exporting and innovation activities. Moreover, it will examine the effect of innovation on exporting activities.

4.4 Research Strategy

There is a debate in social science studies about the appropriateness of using positivist or phenomenology paradigm in answering the research question. The positivist paradigm uses the quantitative approach seeking to explain phenomena by examining, measuring, and quantifying results rather than understanding them (Alvesson and Deetz, 2000). Alternatively, there is the phenomenology paradigm which is associated with qualitative methods to facilitate the understanding of human perception and experience. However, it is considered to be time-consuming and difficult to analyse.

In conclusion, the main aim of the research strategy is to deal with how the research question will be answered. It is important as a framework for generalisation of evidence understudy (Bryman and Bell, 2003). In this study, the aim is identifying, measuring, and evaluating the significant effect of exporting and innovation on firm growth while examining the effect of innovation on exporting and providing a rational explanation for it. The study is adopting the positivist approach for the following reasons:

- The research tests the theory by examining the exporting and innovation activities in the Egyptian SMEs (deductive approach).
- It uses primarily quantitative data collected from questionnaire.
- A representative sample of sufficient size was selected for generalisation (406 firms).

Understanding the approach to be utilised in the research, an appropriate tool was used for collecting data. Different types of questionnaires tools were used as they are associated with the deductive approach that helps in collecting data for analyses. They are used for explanatory and descriptive research. The latter helps in describing the variability in different phenomena and portrays an accurate profile of SMEs in Egypt. On the other hand, the chosen research approach provides an explanation and examination between variables such as the cause and effect relationships (Saunders et al*.,* 2009). Moreover, it aims at testing theories and therefore, the importance of reliable data is important. Since the research main objectives is to examine the effect of exporting and innovation activities on SMEs growth in Egypt, the questionnaire tool provides the best fit for the research question allowing for collecting a large sample of data from the population in an economically effective way (Saunders et al., 2009). It will aid in producing

the descriptive survey, describing the owner and firm characteristics, export and innovation activities within the SMEs. Secondly, it will provide an explanatory survey which examines the effect of innovative and exporting activities on firm growth as well as the effect of innovation on SMEs exporting activities in Egypt.

4.5 Research Design

Research designs “provide a framework for the collection and analysis of data” through different methods such as surveys, experiments, case studies, grounded theory, ethnography, and action research (Bryman, 2001:29; Saunders et al., 2009). It makes sure that the hypotheses developed could be rigorously tested and the results could be generalised taking into consideration the reliability of the models’ constructs. Hence, the importance of using the suitable design in research is directed by the theoretical as well as the methodological principles of the study.

It is important to understand the research question before planning the research design while identifying the weakness and strength of each method. Having addressed the research philosophy, paradigm, and strategy this section will provide an explanation of the methodology chosen in this research highlighting the advantages and disadvantages of each tool. The main objective of the study is to make sure the model’s construct are reliable and is accurately measured whereas, the hypotheses are rigorously tested and the results could be generalised. For this reason, primary data was collected to meet these objectives since no secondary data were publicly available in Egypt. As mentioned earlier, this research is adopting a positivist approach and will use quantitative methods for testing the hypotheses developed. A conceptual model was developed integrating internationalisation and innovation theories together with growth theories to develop the research hypotheses. For testing the research hypotheses, a cross-sectional study was used for gaining a representative sample of the population for the year 2013. Therefore, the quantitative approach which entails a deductive approach enables testing those theories and hypotheses. Most of the theories regarding small firm internationalisation, innovation, and growth are mentioned in early chapters. It could be found that the quantitative analysis and positivist approach have dominated the research on small firms (Siano, 2014; Golovko and Valentini, 2014; Love and Mansury, 2009; Nguyen et al., 2008; Love and Ganotakis, 2013; Roper et al., 2006; Ganotakis and Love, 2011; Higón and Driffield, 2011; Curran and Blackburn, 2001). Most of the research that aims at understanding business phenomena uses a quantitative approach to offer a wider variety of understanding of data in

order to generate meanings. The use of quantitative analyses such as questionnaires is easily replicated and therefore, reliable. While questionnaires address the theoretical and conceptual areas, it does not allow the respondents to reflect and provide information on their own value judgement.

Egypt, which is ranked 73 in doing business for the year 2015 (Doing Business, 2015), is still suffering from a lack of firm-level data. Therefore, it was important to collect primary data for the research as there were no secondary data to support the study. Taking into consideration the advantages and disadvantages of qualitative and quantitative methods, the research design objectives supported the use of the quantitative methods. It was found that the use of questionnaire would be the most appropriate for the research in order to meet its objectives. It provides descriptive and explanatory (i.e. multivariate) analysis for the population under study which can be generalised (Bryman and Bell, 2003). Saunders et al. (2009) had identified several advantages for the use of self-administrated questionnaires as follows:

- They enable the collection of large sample size for generalisation purpose;
- They are widely spread at the same time, increasing the response rate;
- They are cost effective and less time consuming compared to interviews which are time consuming and difficult to interpret;
- They allow for anonymity;
- Data are suitable for statistical analysis (there are several tools such as the SPSS and STATA) which makes it easier for interpreting the results;
- Simple and quicker to administer;
- Participants can answer at their own convenience and have more time to think before answering the question;
- Response rate could be improved through follow-up calls.

On the other hand, the disadvantages of using the questionnaires are:

- The response rate is low;
- Lack of clarity;
- Respondent might misinterpret the question;
- Delay in answering the questionnaire;
- It will not be suitable for questions requiring clarification.

Taking into consideration all these recommendations and suggestions, a number of criteria were used in this study. Moreover, the questionnaire used simple language in structuring the question. It includes a wide range of questions to cover several aspects for research whereas the questions used were objective. The questionnaire in both Arabic and English, versions are presented in Appendix (2)

4.6 Types of Questionnaires

There are many types of questionnaires that could be used to collect data and each has its advantages and disadvantages. Questionnaires could be administrated in different ways; there are self-administered and interviewer-administered questionnaires. The self-administered questionnaires are mainly filled by the respondents either through internet/mail, postal, or delivery/collection forms. While the interviewer-administered questionnaires are done by the interviewer, based on the respondent's answer/choice, it could be in the form of telephone questionnaire or structured interview (Saunders et al., 2009). This research used different types of questionnaires to collect primary data from a sample of Egyptian SMEs. A random sample was drawn from exporting and non-exporting firms list which was provided from the sample framework covering wide industry sectors in different geographic area. The key informants in the questionnaire were owners or general managers since they are knowledgeable about the firm and manager characteristics, innovation, and exporting activities of the firm. Stratified random sampling was used in which the population was divided into exporting strata and non-exporting strata. Then a simple random sample is drawn from each stratum as dividing the population into relevant strata reflects how well the sample is representative (Saunders et al., 2009). The main advantages of stratified sampling is dividing the population into homogenous groups before sampling which improves the representation of the sample as it captures key population characteristics.

4.6.1 Self-administered Questionnaires

4.6.1.1 Postal Questionnaire

This type of questionnaire was used to target large sample covering a wide geographic area. The advantages of postal questionnaires are: cost-effectiveness, simplicity, greater anonymity, and low bias error as the researcher has no control over who is filling them. However, the

disadvantages of the postal questionnaire are the low response rate that could affect the generalisation of data and delay in answering the questionnaire (Collis and Hussey, 2003).

Taking into consideration the advantages and disadvantages of each method, a postal questionnaire was used to generate data needed to answer and explain the research hypotheses. The survey was mailed in spring 2013 addressing top managers. A total of 1000 questionnaires were mailed to SMEs engaged in exporting activities and 1000 to non-exporting firms, along with a cover letter and self-addressed stamped return envelope. The questionnaire had The British University in Egypt (BUE) letterhead [1] as mailing address to increase response rate as suggested by Greer and Lothia (1994). Respondents were asked to complete the survey and return it to The British University in Egypt address. The questionnaire was coloured as recommended, to improve the response rate as the owners could recognise it through other papers. The cover letter attached described the purpose of the research, aims, objectives, and impacts while showing respondents the usefulness of the study for their business, academics, policy makers, and economy. An offer was made to send the research findings to those who are interested. Out of the 2000 surveys that were sent only, 57 were useable. A four week's grace period was given and another attempt was carried out sending a second reminder to those who did not participate. This stage resulted in a total of reusable questionnaires of 69. In total, 126 questionnaires were usable representing a response rate of 6.3% which is low. The reasons for the low response rate were the following:

- The address of the firm was not found;
- The owners were very busy and not interested to take part in the questionnaire;
- They were not completed correctly.

4.6.1.2 E-Mail/online Questionnaire

E-mail/online questionnaires are considered to be cost effective and can reach a large population very quickly but, better to be linked with other methods to provide multiple method research design to collect large response. Those types of questionnaires are delivered and returned automatically using either the email or internet (Saunders et al*.,* 2009).

[1] The British University in Egypt (BUE) is an accredited University by the Egyptian Supreme Council and Partner with Loughbourgh University, UK. The researcher is working there as an Assistant Lecturer.

In this study, the e-mail/online questionnaires were only used for those respondents who requested a softcopy of the questionnaire to fill in and send. It was mainly used for conducting the telephone questionnaire. From the database that was provided, there was no information regarding firm's email address. Thus, an email questionnaire was sent to a sample of only 22 firms out of which only 4 emailed back. A further reminder was sent one week after the first mail was sent resulting in further two questionnaires. A third reminder was sent with no reply resulting in a total of only six questionnaires. E-mail questionnaire is considered to be better than the postal mail as it gives a greater control because there is no way to ensure that the entrepreneur him/herself is the respondent in the postal questionnaire. Although this research addressed this gap by adding a section for only managers, it will be difficult to identify whether the entrepreneur or someone else completed it. In this case, it was clear who was answering the questions since it was sent to their personal email, thus increasing the reliability of data collected through a key person. However, one of the main barriers that hindered the collection of data was the lack of manager's email address in the list.

4.6.2 Interview-administered Questionnaires

In parallel with the previous tools, this research used the interview-administered questionnaire due to the low response rate from previous approaches. The advantage of this tool was to improve the reliability of data and increase response rate. Both types were used, the telephone questionnaire and the structured interview. It was found that the best way to answer the long questionnaire designed for this research and collect data was the telephone questionnaires.

4.6.2.1 Telephone Questionnaire

This research conducted a telephone survey approach which is characterised as a semi-personal method for data collection (Wilson, 2010). It is an inexpensive, wide coverage and time-efficient approach for conducting surveys among SMEs, and provides an opportunity for controlling the quality of data. It is cheaper than face-to-face interview and there is less chance of bias, however, the questions must be short and simple (Saunders et al., 2009). The advantage of this method is its ability to serve different geographic areas and provide higher response rate than the postal questionnaire.

This stage was taken to overcome any low response rate resulted from previous stages. A random sample of SMEs was selected for telephone questionnaire; out of which 274 firms

participated in. Meanwhile, permission was taken to undertake the research through the telephone and to share the results of the study for those who are interested afterwards.

4.6.2.2 Structured Interview

Structured interview uses questionnaires based on the standardised set of questions. It is used to collect quantifiable data from a social interaction between the researcher and the participants (Saunders et al*.,* 2009). It is considered to be an appropriate method in research and common in most of the quantitative social studies work. For research with low response rate, the interview-administered could be used to achieve a higher response rate. This approach could also be used for the pre-testing stage where the researcher takes down all the recommendations, suggestion, and criticism on the questionnaire for modification before the final draft is sent. However, the disadvantage of using such method is its high cost.

In this study, two exporters and two non-exporters were approached. This step was conducted before the previous data collection tools to amend any changes in the questionnaire before distribution. The owners were contacted for an appointment to conduct the structured interview. The aim of the research, objectives, and its importance was clearly introduced to them. After the interview, their recommendation and suggestions about the questionnaire led to amending some of these changes and it was ready for distribution.

In summary, this study used both self- and interview- administered questionnaires to collect data from the Egyptian SMEs sample. It first distributed 1000 questionnaires to exporters and 1000 to non-exporters using postal questionnaires. Out of the 2000 questionnaires that were distributed, only 126 firms responded back, representing a response rate of 6.3%. Thus, in order to increase the sample size a telephone questionnaire was used following the postal questionnaire step. Before drawing the sample for the telephone questionnaire, the 126 firms that responded to postal questionnaires were removed from the list then a random sample was drawn. This approach has resulted in collecting 274 usable questionnaires. In addition to that, some firms when conducting the telephone questionnaires requested a softcopy to be sent to their email. This step has resulted in an addition of 6 questionnaires and in total of 406 usable questionnaires thus, increasing the response rate to 20.3% which is considered to be adequate in social science research. Table 4.4 shows the different instruments used to collect the data and the sample collected from both exporters and non-exporters.

Table 4. 4 - Response Rate

Survey Instrument	*Panel Size*	*No. Of respondents exporting*	*No. of respondents non-exporting*	*Screening*
Structured interview	4	2	2	4
Postal Questionnaire	2000	45	81	126
Telephone Questionnaire	1874	132	142	274
Email Questionnaire	22	2	4	6

4.7 Questionnaire Development Process

The most important part in a research is designing a proper questionnaire which interprets the theories with hypotheses to answer the overall research questions. It is not easy to draw up a good questionnaire which interprets literature with hypotheses; hence, this stage required reviewing literature and previously validated questionnaires to design the questionnaire. Collis and Hussey (2003) identified two types of questionnaires. There is the descriptive questionnaire which is concerned with identifying and counting the frequency of a specific population and there is the analytical survey which determines whether there is a relationship between variables.

The structure of a questionnaire is vital to minimise possible mistakes and increase the number of responses through collecting the required data. Before constructing a questionnaire, it is important to understand and decide what information is to be collected and from whom. In this study the questionnaire used the following type:

- Closed questions: in these questions the respondents had to choose from a list of possible answers. Such questions are useful when all the possible responses are considered. Five types of closed questions were used in this study as identified by Saunders et al. (2009) as follows:

a. List: respondent choose from a list of possible answers;
b. Category: respondents choose only one from a given set of categories;
c. Rating: usually uses the Likert-style rating scale to choose from a range of statements in which the respondents are asked to strongly agree or disagree with. It is used to collect opinion data.
d. Quantity: this gives number and amount to the question.

e. Matrix: helps in recording responses to similar questions.

The research questionnaire used multiple types of questions. It used the quantitative questions to collect data about the firm's size and age; while a list option to collect information regarding innovation and exporting activities as well as the entrepreneurial and firm characteristics. Furthermore, the questionnaire was also designed to measure variables on 3-point and 5-point semantic differential scales (Likert scales). It was used to collect opinion data where respondents answer how strongly they agree or disagree with the statements. The questions were grouped so that the whole section deals with certain characteristics 'matrix questions' mainly in the form of closed questions before mailing to the small firms as well as a general profile of the firm and owners characteristics. Moreover, a detailed section regarding the exporting and innovation activities of the firm was provided. The information regarding the size (in terms of employment growth) is important for the study to highlight the effect of innovation and exporting on the growth of firms.

The use of closed questions provided a unified frame of reference for participants to answer which is considered to be easy and time efficient since it gives limited choices (O'Leary, 2010; Saunders et al., 2009). The closed questions result in efficient data and are easy for analyses, enhance comparability of answers between variables, and convenient for collecting factual data. However, the disadvantage of closed questionnaires is its difficulty when constructing as it provides a fewer options for respondents to choose from (Bryman and Bell, 2003; Collis and Hussey, 2003).

4.7.1 Questionnaire Content

The questionnaire was divided into four main sections namely, firm characteristics, innovation activities, exporting activities, and the owner characteristics.

Section (A): Firm Characteristics

The first part of the questionnaire was designed to address the firm characteristics profile. Literature had discussed the importance of firm age, industry, structure type and size on firm exporting, innovation activities, and growth (Hart and McGuiness, 2003; Bridge et al., 2003; Smallbone and Wyer, 2000; Autio et al., 2000; Storey, 1994; Barkham et al., 1996). Hence, this questionnaire incorporated those variables into the design such as: the number of years since

establishment of the firm (age), the number of employees in two successive years (to measure the growth in size), the industry operating in, and type of ownership.

The design used closed questions to collect such data while size (growth) was measured as a continuous variable. Moreover, the questionnaire used Likert scale to understand the entrepreneur perception on the factors affecting firm performance, the strategic objectives of the firm, factors hindering innovation activities, and exporting strategies. It was important to develop clear, short and useful questions in order to avoid errors. This is why the questionnaire was in simple language and tried to avoid negative questions by using direct ones. The questionnaire adopted the general rule of thumb for designing it as Saunders et al. (2009) recommended. It used easy questions at the beginning, sensitive ones later, and general questions at the end. The questionnaire length is considered to be important in increasing the response rate of participants. The smaller it is, the more likely will they participate and answer the required questions. Saunders et al. (2009) pointed out that the length of a questionnaire should be around six to eight A4 page which was taken into consideration.

Section (B): Innovation Activities

This section addressed the innovation activities within the Egyptian SMEs sample. As there was no database in Egypt regarding innovation within the enterprises, this section was added to capture such activities. It used dichotomous questions to capture the firm innovation activities. Firms were asked whether they are engaged in any innovation activities or not, type of innovation, and their R&D status. For those who innovated, they stated whether it is new to the industry or firm and whether it is an improvement or new innovation. As for those who do not innovate, they were asked about the factors hindering their innovation process. Thus, the questionnaire compiled a profile of innovative SMEs within the sample to be able to examine the main objectives of the research.

Section (C): Exporting Activities

This section identified the exporting activities in Egypt SMEs and asked questions regarding their international and domestic sales as well as information regarding strategies, competition, current sales, and how long have they been exporting. The question was dichotomous asking the firms whether they are engaged in exporting activities or not.

Section (D): Owner Characteristics

One of the important dimensions in studying firm growth is the owner-managers characteristics. It was found that owner-managers characteristics strongly affect firm decision to innovate, export, and grow (Colombelli, 2015; Lockett et al., 2013; Littunen and Niittykangas, 2010; Andersson, 2003; Bridge et al., 2003; Sonia et al., 2005; Heshmati, 2001; Storey, 1994; Barkham et al., 1996). For this reason, this section was developed aiming at gathering information regarding manager characteristics. Such information included the owner number, gender, experience, education, and age. This information was used later as control variables in examining the determinants of growth in Egyptian SMEs.

4.7.2 Pilot study and Pre-testing of the Questionnaire

A pilot study refers to a small-scale study to test a questionnaire while allowing for the collection of the question's reliability and validity (Saunders et al., 2009). It is an important process for increasing research reliability while collecting early warning on questions to be modified. Moreover, it identifies defects in the questionnaire through evaluation to ensure that it fulfils the research objectives thus, refining the questionnaire and affirm an understanding of its items. According to Saunders et al*.* (2009) and Collis and Hussey (2003), the importance of the pre-testing are:

- To identify if the questionnaire needs any clarification or modification;
- To ensure that the questions are understood correctly;
- To identify how clear, easy, and reliable the question is;
- Whether the layout was clear and attractive;
- To estimate how long does it takes for completion; and
- To make sure that the questions were correctly translated.

Hence, it was important to ask the respondents about the questionnaire content and whether it meets the objectives of research or needs to be improved to reduce any ambiguity or problems. This stage was important for modification purpose before the actual one sent. The first stage was testing the questionnaire among entrepreneurs. A structured interview was set among two exporting and two non-exporting SMEs. The entrepreneurs were given the questionnaire and were asked to write down problems encountered to be modified later. They had to report for any difficulties they faced, suggestions, and criticism while recording the time it took them for completing the questionnaire. Since the questionnaire would run in Egypt, it was necessary to

translate from English to Arabic. The translation work was carried out by the author and then given to an expert. It was conducted in the Arabic language to address home country firms. Therefore, it was translated from English-Arabic by the author and then another specialist translated it from Arabic-English. The aim of doing the back translation is to compare with the original documents and make sure that the meaning conveyed is correct and not lost in the translation. Then, a pilot survey for two exporting and two non-exporting firms was conducted to improve the wording throughout the survey while eliminating unnecessary questions and detect potential problems. This step increases the validity of the research. The only comments received on the questionnaire were:

- In the firm characteristic section, there were two different questions relating to the size of the firm, however, the category that lies in does not show exactly if the firm is growing or not in terms of employees. Therefore, the question regarding the size was changed from being categorical to continuous (quantitative) to capture the change in firm size (growth).
- The age question was changed from categorical to continuous (quantitative).

The second stage was sending the questionnaire to an academic professor of small business enterprise at Aston University to carefully examine and double-check it. Amendments were made following these two stages and the final stage was sent out accompanied by a cover letter.

4.7.3 The Cover Letter

The final questionnaire was developed and ready for distribution after being carefully examined. A cover letter stating the aim of the research, its objective while describing the nature of the study and its importance was sent to the participants along with the questionnaire. It explained the anticipated benefits for policy makers and other organisation to increase the response rate. Furthermore, they were assured that the responses would only be presented in aggregate, not firm's case. Also, they were advised that the questionnaires were to be completed anonymously and their information will be held in strictest confidentiality. The cover letter had The British University in Egypt (BUE) logo as mentioned earlier to increase the credibility of the research and giving it more value and legitimacy. In addition to that, recommendations to increase the response rate were taken into consideration such as the use of coloured questionnaire and participants were offered a summary of the results if they attached their business cards or provided their information in the last section.

In summary, this section had covered the research design and the process by which the questionnaire was developed. It presented different types of questionnaires highlighting the

advantages and disadvantages of each tool and how it served the research purpose. Moreover, it tackled the pre-testing stage and the development of an appropriate cover letter.

4.8 Research Constraints

The postal questionnaire turned to be not an appropriate method for collecting data in Egypt. The low response rate from the postal questionnaire restricted the collection of large sample for research usage. Although surveys are the most common methods used in social science and one of its advantages is the large data collection, this did not seem to be the case in Egypt. In the context of the Egyptian culture, the respondents were less likely to participate in the questionnaires sent to them or even the e-mail/online approach. However, it was found that the telephone method of data collection was the most appropriate tool in collecting the required sample. In addition to that, most of the postal addresses were not updated and many were returned back.

4.9 Sample Design and Sampling Procedures

The sampling techniques are defined as “a range of methods that enables you to reduce the amount of data need to be collected by considering only data from sub-group rather than all possible cases and elements” (Saunders et al., 2009: 210). Sampling is helpful when the researcher cannot survey the whole population or there is time and budget constraint. Hence, describing the target population and defining it is an important task at this stage for the research process which will be reviewed in this section.

4.9.1 Identifying the Target Population

The intent of this research is to examine the determinants of growth in the Egyptian SMEs focusing on innovation and exporting activities as an important strategy for growth. The first step was to identify the target population for the sampling process. It also includes high-tech and low-tech industries to address the gap highlighted in literature (Veglio and Zucchella, 2015; Zahra et al., 2000; Autio et al., 2000). Hence, the study’s population of interest was the Egyptian SMEs covering all sectors and geographical areas. The research was interested in those who export and innovate thus, it was important to define both terms clearly in order to identify the correct sample.

Firms with exporting activities are defined as 'those who are selling products or services produced in the home country to international market'. On the other hand, innovation is defined as 'any new idea that firm adopts in its product, process, or marketing activity'. The definitions derived were based on validated and universal definitions adopted in previous studies. The innovation variable that is used contains three types of innovation namely: product, process, and marketing. Product/services innovation refers to any improvement in existing products, creating entirely new products, or providing new services. Meanwhile, process innovation refers to new or improved ways of working, business models, methods for supplying goods/services, introducing computer-based production applications, and automated materials. Moreover, marketing innovation refers to the introduction of new marketing technique, new pricing or new distribution methods, sales approaches or leasing arrangements.

Literature has highlighted the lack of a universal definition for small and medium enterprises (SMEs) worldwide as it varies from one country to another. Although they share common features globally, each country defines their SMEs and classifies sectors differently. One of the methods that could be used to differentiate the "small" from "medium" is size. The size of firm could be measured using different methods such as the annual sales, size of the assets, value of in-paid capital, annual gross, net revenue, or by the number of employees. However, the most common quantitative measurement for defining the SMEs is the number of employees (Lin and Chen, 2007; Carter and Jones-Evans, 2000; Jones and Tilley, 2003; Storey, 1994). The reason behind this is the ease of gathering such data due to its simplicity while enabling comparison of firm among their sectors and industries. Moreover, the advantage of this measurement is its stability since it is not associated with price or changes in exchange rates. Most Organisations for Economic Co-operation and Development (OECD), define small firms in terms of employees. Scholars studying small firms cited that small firms in the United States are defined as those firms that employ less than 500; the European Union refers to them as those business that employ less than 250; while Australia defined them as those employing from 5-19 (Hermens, 2007; Lu and Beamish, 2001); the Jordan Ministry of Trade and Industry defined them as those who employ from 1-249 (MOTI, 2006). However, in Egypt, small and medium-sized enterprises are defined by law no. 141 of 2004 on the development of small enterprises as:

"*Every company or sole proprietorship practicing an economic activity, whether productive, service-rendering or commercial in which the in-paid capital shall not be less than 50 thousand Egyptian pounds and shall not exceed 1 million Egyptian pounds and in which the number of employees shall not be more than 50 employees, while the micro enterprise in-paid capital shall be less than 50 thousand Egyptian pounds*" (SFD, 2004).

The enterprises are divided into four categories according to the number of employees as follows (MoFT, 2003):

1. Micro-enterprise: 1-4 employees
2. Small- enterprise: 5-14 employees
3. Medium-enterprise: 15-50 employees
4. Large- enterprise: over 50 employees

In this study, the Social Fund for Development (SFD) definition was utilised to identify SMEs in Egypt.

4.9.2 Sample Frame and Size

In this study, a sample was drawn from the Industrial Development Authority (IDA), a governmental database that provides licence to firms in order to start their business. This database contains all formal firms in Egypt. They are required to register in order to take a licence for establishment and benefit from the following:

- Tariff reduction on firm's import raw material needs: which they use in their production.
- Tariff reduction on imports of machinery and spare parts needed for production equipment.
- Reduction of customs duties on the export of products.
- Subscribe to tenders (governmental and non-governmental organisation and auctions).
- Investor benefit from export subsidies (the testimony of industrial history).
- Ease of dealing with banks to open financial credits and loans in favour of the project.
- Reduce the general tax rate.

The database contains 298,300 SMEs out of which 48,348 are exporters and 249,952 non-exporters, providing 1,251,668 jobs. Since it was difficult to have access to all firms on the list, it was requested from the authority to provide the researcher with a representative sample of 1000 exporting and 1000 non-exporting SMEs according to their distribution by governorates and industry in the target frame. A random stratified sample based on the data from IDA with no geographic limitation was then provided. According to the distribution of SMEs in the target frame, the majority of SMEs were located in the following governorates: Sharkya 16%, Cairo

15% and Gharbeya 9.2% while the majority of firms were located in food industry 28%, textile/garments and leather 15% and furniture 11%. Thus, the same distribution was represented in the sample drawn to be representative to the target frame.

Due to the limited availability and accuracy of datasets in Egypt, this research relied on this framework due to its accurate sample frame of SMEs.
The population meets all the following criteria:

1. Small and medium-sized firms (SMEs) as those firms that the number of employees are more than 4 and does not exceed 50; while their in-paid capital is less than 1 million Egyptian pounds.
2. SMEs involved in exporting and non-exporting activities.
3. All sectors are included.
4. Cover different geographical areas.
5. The firm must be independent or privately owned.
6. The business has been operating for at least 3 years.

One of the main barriers faced this research was the lack of compiled data. Egypt is considered to be one of the countries that the response rate is low with no comprehensive data on SMEs regarding their innovation activities. In designing the sample, it will be difficult to follow an ideal probability sample design which consists of all exporting and innovative SMEs in Egypt and then select a random sample from it. Hence, the approach used in this research will rely on data from the Industrial Development Authority (IDA) covering a wide cross-section of industries.

4.9.2.1 The Industrial Development Authority (IDA)

The Industrial Development Authority (IDA) aims at enhancing Egypt's growth rate nationally and internationally while enabling the private sector to develop industrial zones. It contributes to the establishment and encouragement of the local manufacturing companies while, enhances the competitiveness of Egyptian industrial products and facilitates new job opportunities to reduce unemployment. The IDA is the most comprehensive source of data regarding firms, their names, addresses, contact numbers, number of the employees and their industry which will make identifying small and medium enterprises easy however, they do not have records on the firms' innovation activities.

The data compiled from this framework is reliable as it is considered to be the most updated governmental data. The data is reliable because SMEs have to register through giving correct information regarding their firm to benefit from the governmental support as well as renewing their licences. The sample consisted of a broad industry groups such as manufacturing, agriculture, chemical, wholesale/retail, construction/engineering, pharmaceuticals/cosmetics, and others; covering different geographical area. In addition to that, secondary data was also collected from several official organisations regarding the importance of SMEs and their role in the society. Examples of secondary data are:

- General Authority for Investment and Free Zones (GAFI): this is a principle governmental authority responsible for regulating and facilitating investment. It aims at promoting Egypt's potential sectors, attract new investments, facilitate and provide services for investors, and stimulate the development of innovation.

- Export Councils: they aim at developing Egypt's foreign exchange reserve and Egypt's trade balance through promoting exporting to support the economy.

- General Organisation for Exports and Imports Centre (GOEIC): it works closely with the Ministry of Foreign Trade and its main objectives is to facilitate the movement of trade, encourage Egyptian industries to export and boosting their competitive edge to enable them to access international markets.

- Information and Decision Support Centre (IDSC): it is considered as a 'Think Tank' which supports decision makers with regard to economic, social and political issues, and placing emphasis on priority issues to foster the reform efforts that push boosts economy.

- Ministry of Foreign Trade (MoFT)

- Central Agency of Mobilization and Statistics (CAPMAS)

- Egyptian Centre for Economic Studies (ECES)

4.9.2.2 Sample Size

There are a number of factors affecting the choice of an appropriate sample size. One of those factors is the nature of research philosophy; this study is based on a positivist stance which requires interpreting a large sample to generalise the findings in Egypt as a new country under study. Wilson (2010), introduced several other factors that can affect the choice of the sample

size such as the confidence that is required in the data and the size of the total population. The appropriate sample size for the population can be calculated using the below formula:

$$N= [(K \times S)/E]^2$$

Where K= desired confidence level, S= sample standard deviation, E= required level of precision.

Using a confidence interval ± 5% and level of confidence 95%, a sample of 384 cases will be sufficient following the principles of O'Leary (2010); however, the study managed to collect 406 usable cases. This number is considered to be sufficient as Hair et al. (1998) indicated that the minimum sample size is 100 to 150 and considered a maximum of 500 will be sufficient. Therefore, a sample of 384 respondents is considered to be most appropriate. Most studies suffered from small samples as they cannot generalise their work and not considered to be robust. However, in this study a large sample is used to overcome this problem and try to generalise findings. The study successfully collected 406 SMEs which consisted of 179 exporters and 227 non-exporters from (IDA) framework.

4.9.3 Sample Design and Data Collection Procedure

Research design is concerned with how the research will be conducted based on the researcher's view and phenomena under study (Crewell, 2003). The theoretical representation of a sample is important while conducting research and should be relevant for the theory understudy (Davidssoon, 2004) as well as the statistical tools.

The sampling technique enables the collection of data required by considering it from a subgroup instead of collection from the whole cases or population (Saunders et al., 2009). In order to collect a good sample, it was recommended to choose the sample randomly, be large enough for studying the phenomena, and to be unbiased. The importance of using large sample decreases the error in the generalisation to the population (Saunders et al., 2009). Thus, the research had used different types of questionnaire to increase the sample size, discussed earlier in the chapter. On the other hand, a probability sampling was used which selects randomly after dividing it into strata (exporting and non-exporting) in which the chance of each case is known and equal.

4.10 Validity and Reliability

For the research subject, testing the hypothesis, validating, and generalising the underlying study is of particular importance. In order to increase the reliability, validity and usability of the survey, a pilot survey is recommended. The components of a valid study will help to ensure that accurate data is collected. According to Saunders et al*. (*2009), to achieve validity and reliability four steps should be applied. Firstly, the data required and the way the researcher designed must be clear. Secondly, the participants interpret the questions as the researchers aimed for. Thirdly, participants answer the required question. Finally, the researchers interpret and analysis the information collected from the participants according to their perception. In this study, the researcher will codify the answers from the questionnaires and make sure that all data gathered and entered are correct.

The two concepts validity and reliability are very important to take into consideration when carrying research since they help to determine the objectivity of the research. Both are seen as two different measurement instruments that illustrate the level of trustworthiness and credibility of a research. Once the data has been collected, it is necessary to determine the degree to which it is valid and reliable.

On the other hand, non-response bias is considered to be one of the problems facing research other than validity and reliability which should be taken into consideration. Assessing non-response bias is important to confirm that the respondents were representative of the general population. One way to reduce the non-response bias is to have a high response rate, however, the response rate for this study from postal questionnaires were very low 6.3% although all steps were taken to guarantee anonymity and emphasising the importance of the study. Based on this and in order to make sure that the results could be generalised, non-response bias will be assessed; Chapter 5 will examine the response rate. A Leven's test was used to make sure that the data is representative.

Although a review of the relevant literature had provided many threats that could affect the validity of research results, validating measure is important. All measures have to be validated otherwise this will affect the study outcome. The use of previously validated measure can be used since they have proved to be theoretically meaningful characteristics (Davidsson, 2004). Therefore, the study developed the questionnaire based on previously validated work.

Moreover, reliability of research is important. Reliability refers to the extent to which data collection technique will yield consistent results. This study used a questionnaire in order to collect data and therefore to be valid it must be reliable. Reliability increases the robustness of the questionnaire since it refers to the consistent findings at different times and conditions. Pre-testing is used to increase the reliability of research. The questionnaire was sent to 4 entrepreneurs who were exporters and non-exporters. This data collection represents a pre-test of the survey items being used. The importance of the pilot test was to ensure that the wording of the questions was clear, understandable, and appropriate tool for its intended purpose. All the comments were taken into consideration and a final draft was developed for distribution. While designing the questionnaire, previous questions from other research were used while, others were adopted, and questions were developed. In summary, this study used several methods to enhance the reliability and validity of the data. For example:

- The questionnaire was pre-tested on 4 entrepreneurs before data collection. This tested the validity and reliability of each question in capturing the information used. Furthermore, the questionnaire was sent to an expert in the field of SMEs in the UK to ensure validity and content validity. The questionnaire was modified on the basis of the suggestions offered by the entrepreneurs and SME expert.

- Most of the measures used in this study were drawn from previous research and have been proven to be reliable.

4.11 Ethical Issues

Ethical issues are very important in conducting research. There are a number of concerns that should be taken into consideration and implemented. In social science, a number of ethical codes have to be addressed which include protecting human participants as some groups may be vulnerable. In this study, a number of ethical issues have been dealt with during conducting the research. The first issue was debriefing the participants about aims and objectives of the study before collecting the data. For the postal questionnaire, a letter explaining the purpose of the study and its importance as well as the benefits of their participation was attached. Furthermore, with regard to confidentiality, the researcher guaranteed the participants that identifying information would not be made available to anyone who was not directly involved in the study while, the results will be presented as aggregated not firm case.

In summary, the following ethical considerations were implemented as recommended by Bryman and Bell (2007):

- Confidentiality and anonymity of participants were ensured.
- No misleading information was presented.
- They have not been subjected to any coercion.
- The work in this research has been acknowledged.

4.12 Chapter Summary

In conclusion, this chapter had presented an overview of the research philosophy, paradigm, strategy, design, types of questionnaires, constraints, questionnaire development, sample design and procedures, validity and reliability, and ethical issues.

The research adopted a positivist approach which uses the quantitative methods to test the hypothetical-deductive approach. Several types of questionnaires were used to increase the response rate such as postal, e-mail, telephone and structured interviews. However, the telephone questionnaire was found to be most appropriate for gathering data. Each type has its advantages and disadvantages which were explained. Then the chapter presented the questionnaire development process, content and cover letter. A pre-testing was used to improve the reliability of research and amendments were made before the final distribution. Furthermore, the chapter provided details regarding the sample design and sampling procedures.

The study managed to collect 406 firms, in which 179 were exporters and 227 were non-exporters. While there were no data regarding the innovation activities in SMEs, the questionnaire added a whole section to capture innovation within the sample. It successfully managed to collect 141 innovators out of the 406 responses.

The next chapter will present the respondents characteristics.

Chapter 5: Respondent Characteristics

5.1 Introduction

This chapter describes all the analyses gathered from a survey of 406 Egyptian SMEs. Descriptive analysis is used to present the characteristics of the sample whist provide an adequate statistical support to the findings. Moreover, probit regression will be utilised to better understand the Egyptian SMEs profile. The results of the model identified the factors that explain the significant effect of firm and owner characteristics on innovation and exporting activities.

5.2 Characteristics of the Egyptian SMEs Survey Respondents

5.2.1 Response Rate

As this study aims at investigating the determinants of growth in the Egyptian SMEs with respect to exporting and innovation activities, the target sample is the Egyptian SMEs across different industries covering wide geographical area. While previous studies identified that the response rate for similar field using the same data collection, such as questionnaire, yielded a response rate of between 5% and 39% (Watson et al., 1998) several attempts were made to improve the sample gathered.

Using the database from Industrial Development Authority (IDA) a total of 406 firms were collected in which 179 were exporters and 227 were non-exporters. However, the response rate from questionnaires yielded a response rate of 6.3% which was very low thus, different types of questionnaires were used to collect large sample of data to better examine the research hypotheses resulting in an overall response rate of 20.3%.

5.2.2 Non-Response Bias

One key issue which is commonly raised with respect to the use of questionnaires is the non-response bias which is caused by the difference between those who respond to a survey and those who did not respond. In such cases, this could cause an element of bias, as respondents and non-respondents may differ from each other in terms of characteristics relevant to the research (Bryman and Bell, 2003). The non-response bias may affect the generalisation of the sample to the whole population. Although, the higher the response rate, the less likely is the

non-response bias; it seems to be difficult when collecting mail questionnaires. It has been reported frequently in SMEs studies that using such method will lead to low response rate (Chagarti et al., 2002). In this study, non-response bias was treated carefully for only the postal questionnaire as the response rate was low thus the need to ensure that the sample is representative was important. However, the study only managed to test the non-response bias for the postal questionnaire which represents 31% of the sample. Although, the questionnaire highlighted the importance of the research, objective, and guaranteed their anonymity still the response rate was low (6.3%). To test for non-response bias, the respondents to the first and second mailing were compared on key growth variable to find any significant difference. The rationale behind this step is that the second mailing respondents, especially after follow-up are more similar to the general population than the first mailing respondents (Armstrong and Overton, 1977). Therefore, a t-test was developed to compare between the descriptive variable (growth) for both responses in exporting and non-exporting samples. The results showed no significant non-response bias, in exporting (t=.056, p=.803) and non-exporting (t=.543, p=.801). The results showed that growth is similar in both groups thus; the respondents appear to be representative of postal questionnaire (Table 5.1). It was difficult to conduct the same approach regarding the telephone questionnaire due to the difficulty to compare between early and late responses. Moreover, a t-test was used to compare those who responded to questionnaire (postal) and (telephone) to see if there is any difference in each stratum. No difference was found thus, assumed sharing the same characteristics.

Table 5. 1 - Independent Sample Test for Non-response Bias

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Employment Growth (Non-Exporters)	Equal variances assumed	.063	.803	.056	79	.956	.00271	.04865
	Equal variances not assumed			.055	76.610	.956	.00271	.04884
Employment Growth (Exporters)	Equal variances assumed	.064	.801	.543	43	.590	.01540	0.2838
	Equal variances not assumed			.494	20.458	.627	.01540	.03119

5.2.3 Data Preparation

To improve the quality of data gathered, Richardson et al. (1994) suggested the following steps:

1. The questionnaire should be edited for completeness and to discard any unanswered questionnaires.
2. Coding and data entry: the questions in the survey were given codes to facilitate entering on the SPSS and STATA programs (the latter used for more advanced econometric models). A coding guide was developed which helped in transferring the data into the SPSS and STATA.

5.3 General Characteristics, Descriptive Results and Analyses of Egyptian SMEs Sample

In this section, the descriptive data will be presented giving a broader view on the Egyptian SMEs characteristics. Overall 406 Egyptian SMEs participated in the study which will be investigated in terms of firm and entrepreneur characteristics, innovation, and exporting activities. The growth rate in this study is measured by finding the actual change in number of employees which is the size of the firm. The questionnaire collected data about the size of the firm for the period 2012-2013, while the growth rate was calculated as follows:

$$\textit{Growth rate } (r) = (Size_{2013} - Size_{2012} / Size_{2012}) * 100$$

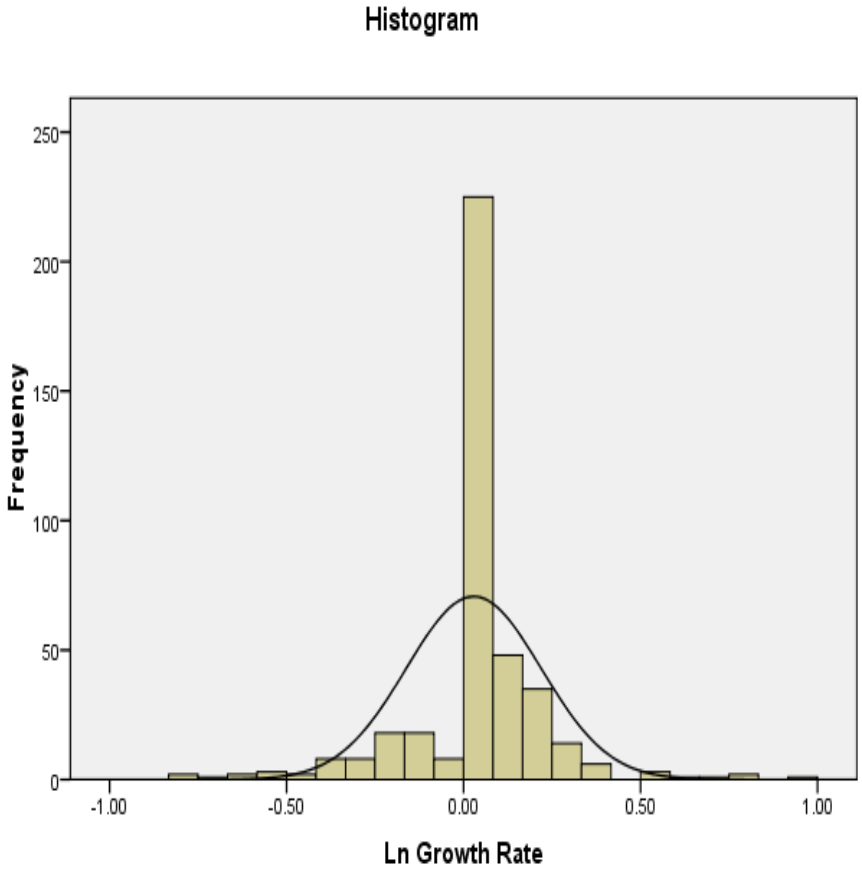
Where $Size_{2012}$ is the number of employees in 2012 and $Size_{2013}$ is the number of employees in 2013 and r is the firm growth rate. However, a transformation for the percentage was made using the logarithms 'Ln' to avoid any problem with the heteroscedasticity.

$$\text{Growth rate } (r) = \text{Ln } (Size_{2013}/Size_{2012})$$

The advantage of this equation is that the coefficient in the regression equation represents the percentage change in the dependent variable for a given absolute change in the independent variable (Barkham et al., 1996). The type of data analysis was also guided by the methods adopted from previous research studies (Nguyen et al., 2008; Bigsten and Gebreeyesus, 2007; Barkham et al., 1996). In the next section, data for the compiled usable questionnaires were analysed using the Statistical Package for the Social Sciences (SPSS) and STATA. The initial data analyses produced general frequencies, 5-number summary, cross-tabulations, and chi-square of independence analyses to provide a detailed profile of the Egyptian SMEs respondents.

A frequency distribution and a 5-number summary were used to summarise the distribution of growth which is presented in Figure 5.1 thus, gives a better understanding of the Egyptian SMEs sample.

Figure 5.1 - Frequency Distribution and 5-Number Summary of Dependent Variable (LnGrowth)



5-Number Summary	
Min	-0.79
Max	0.98
Median	0.0225
Q1	0.000
Q3	0.091

The results in Figure 5.1 show almost a normal distribution for the dependent variable (LnGrowth) with a heavy-tailed distribution. However, it was highlighted that for a large sample size, regardless of the variable under consideration, the possible sample means are approximately normally distributed (Weiss, 2012). As it could be seen, the lowest value is -0.79 and the highest value is 0.98. Moreover, the quartiles give a picture of the dataset as a whole. The Q3 (75% percentile) sits at 0.091 which means that almost 25% of that data is larger than 0.091 and the Q1 (25% percentile) is 0.000 which means that 25% of the data is less than 0.000. Finally the median value, which represents the 50th percentile, is 0.0225.

5.3.1 Definition of Variables used in Correlations, Regression and Probit Analyses

In order to better understand the exporting and innovation activities profile of Egyptian SMEs, a chi-square of independence was used to test for the relationships between the variables. Table 5.2 summarises the variables definition used in the study analysis.

Table 5.2 - Definition of Variables

Variable Name	*Definition*
Growth Rate	Measured as a relative growth which is a continuous variable. A transformation for the percentage was made using the logarithms 'Ln' to avoid any problem with heteroscedasticity.
Exporting	Exporting Firms (1=yes, 0=no)
Innovation	Innovation is defined as those firms who introduced ***products*** (e.g. improving or creating new products), ***processes*** (e.g. business models, new ways of working or methods for supplying goods or services, introducing computer-based production applications, automated materials, introducing manufacturing information system) and/or ***marketing innovation*** (new pricing methods, distribution methods, new sales approaches). Thus, Innovating Firms (1=yes, 0=no)
Firm Characteristics	
Firm Ownership	Ownership structure (1=sole proprietorship; 2=partnership; 3= limited liability)
Firm Age	Firm Age (1= 3-5years and less; 2= 6-10 years; 3=11-22 years)
Firm Size	Firm Size (1=small (5-14 employees); 2= medium (15-50 employees)
Firm Industry	Firm Industry (1= low-tech industries (agriculture, furniture, textile/garment/leather and food sectors) ; 2= high-tech industries (engineering/ electronic/electric, pharmaceuticals/chemical/ cosmetics); 3= other (construction/ alloy/ ceramic/ others)
Owner Characteristics	
Number of Owners	Number of owners (1= more than 1 owner; 0= 1 owner)
Gender	Gender (1=male; 0=female)
Owner Age	Owner Age (1= young (19-29); 2=middle (30-49); 3= old (50+ years)
Owner Education	Owner Education (1=no/min education (secondary/high school education or none); 2= Diploma/institute (diploma, vocational training/institute); 3= higher (university/ postgraduate degree)
Owner Experience	Owner Experience (0= less than 5 years; 1= 5 years and more)

5.3.2 General Characteristics of Egyptian SMEs- Firm Characteristics

Firm characteristics are found to have a significant effect on the growth of firms. Literature had highlighted the importance of firm age, ownership structure, size, and type of industry on the growth of firms. Therefore, it was important to analyse the characteristics of the sample to give

an overview on Egyptian SMEs. Moreover, it is important for policy makers and businesses to identify factors affecting their growth and hinder their performance to provide solution for it.

5.3.2.1 Firm Ownership Structure

Previous studies found that limited companies are more likely to grow than sole-proprietorship and partnership structure (Storey, 1994; Davidsson et al., 2002). Firms operating under this structure take more risk since their belonging are secured. Therefore, they are encouraged to grow. However, a study done on Indian SMEs found that sole proprietorship has resulted in faster growth compared to other forms (Coad and Tamvada, 2008).

In this study, more than half the Egyptian SMEs are sole proprietorship 59.6%, while 29.3% are partnership and 11.1% are limited liability firms. From the results in (Table 5.3), it could be found that sole-proprietorship has a minimum growth rate of -0.79 and maximum of 0.55 with a median of 0.00, 25% of the sole-proprietorship has growth rate less than 0.00 and 25% greater than 0.07. On other hand, partnership has a minimum -0.63 and maximum of 0.98 with a median of 0.05, while 25% has a growth rate less than 0.00 and 25% greater than 0.17. Moreover, limited liability has a minimum of -0.41 and maximum of 0.18 with median 0.02, while 25% has growth rate less than 0.000 and 25% has growth more than 0.07.

It seems that those who are operating under partnership structure are performing better than sole-proprietorship and limited liability structure. The reason for the high growth in partnership structure could be due to their ability to pool better resources such as experience, education, skills and effort leading to firm growth. On the other hand, those who are individually owned may be suffering from poor management skills that affect their performance. Meanwhile, the limited business growth might be due to firm's preference to start as partnership structure with same function as limited form (Rosa and Scott, 1999).

Table 5. 3 - Ownership Profile of Respondent Firms in Egypt

Firm Ownership Structure	*N*	*Min*	*Max*	*Median*	*Q1*	*Q3*
Sole-proprietorship	242	-0.79	0.55	0.00	0.000	0.07
Partnership	119	-0.63	0.98	0.05	0.000	0.17
Limited Liability	45	-0.41	0.18	0.02	0.000	0.07
Total	406					

5.3.2.2 Firm Age

Studies had identified firm age as a factor affecting the growth of firms. It is associated with accumulation of resources, experience, and technology. However, mixed results were found

regarding the relationship between age and growth. A negative relationship was found where younger firms tend to grow more rapidly than older firms (Bigsten and Gebreeyesus, 2007; Storey, 1994; Davidsson et al., 2002; Andersson, 2003; Cabral and Mala, 2003; Harding et al., 2004; Sleuwaegen and Goedhuys, 2002). This was supported by the seminal work of Jovanovic (1982) who proposed the learning model in which firm grow quickly at first then growth starts to decrease as it approaches its optimal size. On the other hand, Das (1995) found a positive relationship between firm age and growth. This growth could be due to accumulation of entrepreneur experience and expertise. They could be benefiting from learning curve or the dynamic economies of scale. Alternatively, they may have developed a better work system, better production facilities, hired more skilled workers, increased their formal and informal networks and became a part of a bigger supply chain.

In this study, the respondents are asked to indicate the year of establishment of their firm. They are then divided into three categories: young (3-5 years), middle (6-10) and old (11-22) firms (Table 5.4).

Table 5. 4 - Firm Age Profile of Respondent Firms in Egypt

Firm Age	*N*	*Min*	*Max*	*Median*	*Q1*	*Q3*
Young (3-5 years)	119	-0.63	0.98	0.000	-0.12	0.08
Middle (6-10 years)	232	-0.62	0.83	0.04	0.000	0.13
Old (11-22)	55	-0.79	0.26	0.03	0.000	0.04
Total	406					

From the results above, it was found that middle-age firms are performing better than younger and older firms. Young-aged firms have a minimum growth rate of -0.63 and maximum 0.98 with a median of 0.00, while 25% have growth rate less than -0.12 and 25% greater than 0.08. Furthermore, in middle-aged firms, the minimum growth rate is -0.62 and maximum of 0.83 with median of 0.04, while 25% have a growth rate less than 0.000 and 25% are greater than 0.13. However, old firms have a minimum growth rate of -0.79 and maximum 0.26 with a median of 0.03, while 25% have a growth rate less than 0.000 and 25% are greater than 0.04.

This could be due to the fact that younger firms suffer from lack of resources and support which might affect their performance in their early years. Their experience, network, innovation, and exporting activities may be limited at their early stage. However, when the firm starts to grow and their learning curve increases, their growth increases as well. As firms move along the curve, they may access an overall lower cost factors of production, become a part of bigger supply chain, adapt to market change, hire more skilled workers, and have better access to formal and

informal networks. All these factors may have played a role in their growth. Whereas, old firms performance could be due to being out of touch with changes in market conditions or lack of motivation for growth.

5.3.2.3 Firm Size

The firm size is commonly measured using its employment size. Literature found a negative relationship between firm size and growth rate (Coad and Tamvada, 2008; Bigsten and Gebreeyesus, 2007; Aidis and Mickiewicz, 2004; Faggio and Konings; 2003; Sleuwaegen and Goedhuys, 2002; Chow and Fung, 1997; Wagner, 1995; Storey, 1994) while Li and Rama (2014) found a weak relationship. This may be reflected in the ability of small firms to be flexible compared to larger firms enabling them to respond quickly to market changes. In this study, the employment size of the firm in 2013 is divided into two categories. The first category consisted of small firms that employed between 5-14 employees which accounted for 27.3% of the sample. The second category consisted of those who employed between 15-50 employees which accounted for 72.7% of the sample. These groups were divided according to the MoFT, (2003).

Table 5. 5 - Firm Size Profile of Respondent Firms in Egypt

Firm Size	*N*	*Min*	*Max*	*Median*	*Q1*	*Q3*
Small Firms (5-14)	111	-0.79	0.51	0.000	-0.13	0.02
Medium Firms (15-50)	295	-0.62	0.98	0.04	0.00	0.1
Total	406					

The results from Table 5.5 found that medium firms are performing better than smaller firms which is in line with previous work (Hall and Tu, 2004; Eusebio et al., 2007). Small firms have a minimum growth rate of -0.79 and maximum of 0.51 with median of 0.000, while 25% have less than -0.13 and 25% have greater than 0.02. On the other hand, medium firms have a minimum growth rate of -0.62 and maximum of 0.98 with median 0.04, while 25% have less than 0.00 and 25% have growth rate greater than 0.1.

Those medium-sized firms perform better than smaller ones due to their ability to acquire better resources, have more skilled labour, better production facilities and engage in innovation and exporting activities. Therefore, the main aim is to foster their growth as medium-sized firms are found to have higher growth rate thus, contributing to the economy and job creation positively.

5.3.2.4 Firm Industry

The firm industry sectors are grouped into three main different categories to be easily analysed. The first category 'low-tech', consists of those who do not heavily depend on advanced technology and have similar characteristics such as furniture, agriculture, textile, food manufacturing which constitute half the sample. The second category is 'high-tech', which includes those firms that are more research oriented and engage in technological activities such as engineering, electronic, electrical, pharmaceutical and cosmetic. The third category 'Others' includes construction, alloy, and ceramic sectors. In this sample, the majority of firms were operating in the traditional sector 'low-tech' representing 53.2 % of the sample. On the other hand, the 'high-tech' category represents 32.3% and the 'other' 14.5%.

Table 5. 6 - Industry Profile of Respondent Firms in Egypt

Firm Industry	*N*	*Min*	*Max*	*Median*	*Q1*	*Q3*
Low-tech *(agriculture, furniture, Textile/leather/garment, food)*	216	-0.79	0.83	0.02	0.000	0.09
High-tech *(engineering/electronic/electric, pharmaceuticals/cosmetics, chemical)*	131	-0.41	0.83	0.05	0.000	0.15
Others *(construction/alloy/ceramic)*	59	-0.55	0.98	0.000	-0.18	0.000
Total	406					

The results from Table 5.6 found that the minimum growth rate for low-tech firms is -0.79 and maximum of 0.83 with median of 0.02. It was found that 25% are less than 0.000 while 25% have growth rate greater than 0.09. On the other hand, high-tech firms have a minimum growth rate of -0.41 and maximum of 0.83 with median of 0.05, while 25% have growth rate less than 0.00 and 25% have growth rate more than 0.15. However, the third group had a minimum growth rate of -0.55 and maximum of 0.98 with median 0.00, while 25% have a growth rate less than -0.18 and 25% have greater than 0.000.

Firms in the high-tech category were performing better compared to the other categories; which were supported by previous studies (Davidsson et al., 2002; Bridge et al., 2003). This might be due to their ability to provide better and unique products which depend on innovation thus, foster their growth. The nature of the high-tech firms enables them to differentiate their products in order to open up to international market which requires competitiveness and flexibility among all industries. They are able to compete and adapt to rapid change of environment quickly compared to the other categories due to their technology.

5.3.3 General Characteristics of the Egyptian SMEs - Owner Characteristics

The role of owner characteristics is central for the growth and development of firms. They are considered to be important internal resources that were extensively studied in previous literature (Boermans and Roelfsema 2015b; Smallbone and Wyner, 2000; Kirkwood, 2009; Blackburn et al., 2009; Andersson and Tell, 2009; Barringer and Jones, 2004; Storey, 1994; Barkham et al., 1996). The next section will provide a description regarding the owner characteristics such as the number of owners, gender, age, education, and experience.

5.3.3.1 Number of Owners

Research into owner characteristics suggests a relationship between firm growth and the number of owners. It was found that high level of growth is associated with multiple-owners (Barringer and Jones, 2004; Cooney and Malien, 2004; Barkham et al., 1996) and those who are working as teams perform better than those who operate individually. One explanation for this result is that team management is associated with better skills, resources, ideas, and fund. However, conflicts can arise between managers which may affect their performance and growth. In this study, it was found that those who had multiple-owners are performing better than those who are individually operating. This result supports the explanation of pooling resources and working as a team which leads to firm growth. Table 5.7 below presents the growth rate of number of owners on a 5-number summary. It could be found that the minimum growth rate for more than one owner is -0.63 and maximum 0.98 with median 0.047, while 25% of growth rate are less than 0.00 and 25% are greater than 0.14. On the other hand, those who are operating individually have a minimum growth rate of -0.79 and maximum 0.55 with a median 0.000, while 25% of growth rate are less than 0.000 and 25% are greater than 0.07.

Table 5. 7 - Owner Number Profile of Respondent Firms in Egypt

Owner Number	*N*	*Min*	*Max*	*Median*	*Q1*	*Q3*
More than 1 owner	156	-0.63	0.98	0.047	0.000	0.14
Only 1 Owner	250	-0.79	0.55	0.000	0.000	0.07
Total	406					

5.3.3.2 Owner Gender

Based on a sample of 406 Egyptian SMEs, a total of 359 responses were males while 47 responses were females (Table 5.8). The male respondents represent 88.4% of the sample while the female respondents represent 11.6%.

Table 5. 8 - Gender Distribution Profile of Respondent Firms in Egypt

Owner Gender	*N*	*Min*	*Max*	*Median*	*Q1*	*Q3*
Male	359	-0.79	0.98	0.03	0.000	0.1
Female	47	-0.51	0.34	0.00	-0.08	0.03
Total	406					

It could be found that the minimum growth rate in males is -0.79 and maximum 0.98 with median 0.03, while 25% of growth rate are less than 0.000 and 25% are greater than 0.1. However, the minimum growth rate in females is -0.51 and maximum 0.34 with median 0.00, while 25% growth rate are less than -0.08 and 25% are greater than 0.03.

Thus, the male owner-managers are performing better than females. Despite female efforts to start their own business, still their participation remains low. In Egypt, the cultural perception of women working and starting her own business is different from that of men. Fewer females are willing to take risk and start business while males are more interested in starting their business and seek market opportunities. Moreover, women have fewer job opportunities which affect the experience needed to start their own business and therefore, affect their capability to grow.

5.3.3.3 Owner Age

A number of previous studies found mixed results regarding the relationship between owner age and firm growth. While some studies found a negative relationship (Davidsson et al., 2002), Barkham et al. (1996) found that high growth was achieved by the middle-aged owners (31-40). On the other hand, Andersson et al. (2004), McGee and Sawyer (2003) and Westhead et al. (2001) found a positive relationship between firm age and growth. It was found that the ability to start a business and grow was linked to the age of individual. Furthermore, there are few studies that did not find any significant link between owner age and starting the business (Abouzeedan and Bulser, 2004; Evans and Jovanovic 1989; Evans and Leighton 1989). However, there is a lack of studies regarding the relationship between owner age and growth in Egypt.

In this study age is divided into three categories (Table 5.9), the majority fall into the age group of 30-49 with 276 responses (68%), followed by those older than 50 with 103 (25.4%), and only 27 responses within age group 19-29. Within this category (30-49), 54% have a postgraduate or university degree while 48.6% have over 5 years of previous experience; which reflects the importance of education and experience.

Table 5. 9 - Owner Age Distribution Profile of Respondent Firms in Egypt

Owner Age	*N*	*Min*	*Max*	*Median*	*Q1*	*Q3*
Young (19-29)	27	-0.43	0.18	0.000	-0.03	0.08
Middle (30-49)	276	-0.73	0.98	0.03	0.000	0.13
Old (Over 50)	103	-0.79	0.83	0.02	0.000	0.06
Total	406					

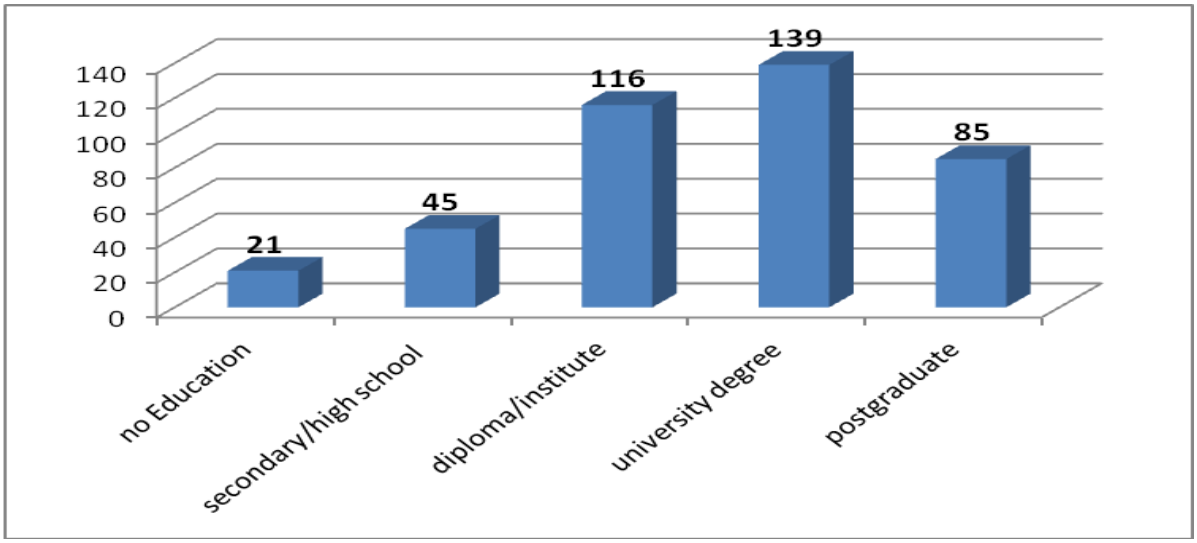
The results of the analyses found that the middle-aged managers are performing better in association with firm growth. It was found that young-aged managers have a minimum growth rate of -0.43 and maximum 0.18 with a median of 0.000, while 25% have a growth rate less than -0.03 and 25% have a growth rate greater than 0.08. Furthermore, middle-aged managers have a minimum growth rate of -0.73 and maximum 0.98 with median 0.03, while 25% have a growth rate less than 0.00 and 25% have greater than 0.13. On the other hand, old managers have a minimum growth rate -0.79 and maximum 0.83 with median 0.02, while 25% have growth rate less than 0.000 and 25% greater than 0.06.

The results suggest that the middle-aged owners appear to be performing better due to their accumulated experience, qualification and planning while trying to seek improvements. They benefit from the flexibility of younger managers and the experience of older ones which facilitates their growth.

5.3.3.4 Owner Education Level

Five different levels of education were used to measure the education level of respondents from formal academic qualifications (Figure 5.2). The owner education level ranged from those who were not educated or have low level of education till postgraduate who have higher level of education. The responses from owners with diploma/institute, university degree, and postgraduate, were 116, 139, and 85, respectively. In this study, it can be seen clearly that the majority of the respondents have university degree and higher education level seems to be dominant representing 55.2% of the total sample while lower education represent 16.3%. The groups are divided into ‘Min education level’, those who were not educated or had a low level of education. Then there is the ‘Diploma/Institute’, those are owners who took either diploma or institute certificate which is similar to each other. Lastly is the ‘High education level’, those are owners who pursued their education, acquired postgraduate degree, masters or PhD.

Figure 5. 2 - Respondent Education Profile in Egypt



The results pointed out that owners with higher education levels are performing better, which is presented in (Table 5.10). It was found that those who have 'min education/none' have a minimum growth rate of -0.73 and a maximum of 0.26 with a median of 0.000, while 25% have a growth rate less than 0.000 and 25% have greater than 0.09. On the other hand, those who have 'diploma/institute' education have a minimum growth rate -0.79 and a maximum 0.62 with median 0.000, while 25% have a growth rate less than -0.12 and 25% have a growth rate greater than 0.03. However, those who have 'high education' have minimum growth rate -0.55 and a maximum 0.98 with median 0.04, while 25% have a growth rate less than 0.000 and 25% have greater than 0.13.

Table 5. 10 - Education Profile of Respondent Firms in Egypt

Education Level	*N*	*Min*	*Max*	*Median*	*Q1*	*Q3*
Min education/none	66	-0.73	0.26	0.000	0.000	0.09
Diploma/institute	116	-0.79	0.62	0.000	-0.12	0.03
Higher education level	224	-0.55	0.98	0.04	0.000	0.13
Total	406					

This might be due to their skills and education level which affect their performance positively compared to those who have lower or minimum education level. Within the higher education level, owners might be more familiar with marketing research, allocating resources or research oriented that help them in developing their firm and seek for new opportunities. This knowledge could be about new processes, new ways of production or even managing the firm. Moreover,

most of the students in different disciplines are taught entrepreneurship courses, business plan and how to start a business which might help in growing their firm. However, those who are 'diploma/institute' education are less likely to grow which might reflect a problem in their education system. Therefore, education plays an important role in firm growth and success and the government should foster the role of education in the development of firms.

5.3.3.5 Owner Experience

Experience provides owners with technical skills and knowledge which contributes to their growth. The majority of owners in this sample had experience less than 5 year; however, those who had more than 5 years of experience were performing better. The results in Table 5.11 found that those who have less than 5 years of experience have a minimum growth rate of -0.79 and a maximum 0.83 with a median 0.02, while 25% of growth rate are less than 0.000 and 25% are greater than 0.08. On the other hand, the minimum growth rate for those who have more than 5 years of experience is -0.73 and maximum of 0.98 with median -0.02, while 25% of growth rate are less than 0.000 and 25% are greater than 0.13.

Table 5. 11 - Experience Profile of Respondent Firms

Experience Level	*N*	*Min*	*Max*	*Median*	*Q1*	*Q3*
<5 years of experience	219	-0.79	0.83	0.02	0.000	0.08
5 years and more of experience	187	-0.73	0.98	-0.02	0.000	0.13
Total	406					

It was suggested that those who had previous experience before starting the firm affected their performance positively and contributed to their growth (Littunen and Niittykangas, 2010; Wiklund et al., 2009; Rauch et al., 2005). Experience expands manager capabilities through accumulated skills, knowledge and social networks thus, develop wider assessment and judgement (Lockett et al., 2013). Moreover, it is important in overcoming barriers, problems, familiarising owners with work routine and developing network from previous work experience. Thus, manager experience and learning leads to firm growth. On the other hand, lack of experience might hinder manager performance especially in SMEs where they suffer from lack of resources.

5.3.4 Profile of Exporting Firms

The increasing importance of exporting in SMEs is reflected in a growing body of literature. It is increasingly important for the growth of firms and innovation activities (Love and Roper, 2015; Boermans and Roelfsema, 2015; D'Angelo, 2012) and performance (Bravo-Ortega et al., 2014; Wagner, 2007; Aw et al. 2007; Roper and Love, 2002). In this section, the sample of 179 exporting firms is studied to find the relationship between exporting and firm demographics, owner characteristics and innovation. A chi-square of independence test will be performed to examine such relationships. It is considered as a useful test when studying the relationship between two categorical variables. It compares observed data with data expected to obtain according to a specific hypothesis, 'goodness-of-fit' between observed and expected need. Table 5.12 below presents the final results of the chi-square of independence test between independent variables and exporting activities in Egyptian SMEs.

Table 5.12 - Chi-Square of independence Test between Independent Variables and Exporting Activities in Egyptian SMEs

Concept Group	Independent Variables	Results of more likely to export
Firm Characteristics	Firm Structure	Partnership
	Firm Age	Middle-aged
	Firm Size	Medium-sized
	Firm Industry	High-tech
Owner Characteristics	Number of Owners	More than one owner
	Owner Gender	Males
	Owner Age	Older managers
	Owner Education	Managers with high education
	Owner Experience	Those who have <5 years
Innovation Activities	Innovation	Innovative firms

Previous studies found mixed results between firm characteristics and exporting activities in firms. In this study, a chi-square of independence was performed between firm ownership types and exporting. A significant relationship between firm ownership structure and exporting was found, $X^2(2, N=406) = 16.9$, $p<0.05$. It could be found that partnership type are more likely to engage in exporting 68.1% than are limited firms 48.9% and sole proprietorship 31.4%. The advantage of partnership types lies in their ability to pool resources and share experience, skills and network which facilitates their ability to export. As small firms are at disadvantage due to their limited resources, such structure helps the firm to grow. However, previous studies found that those operating under limited form are more likely to grow as their belongings are secured (Davidsson et al., 2000).

As for the firm age, a significant relationship between firm age and exporting was found $X^2(2, N=406) = 25.9$, $p<0.05$ which is consistent with previous studies (Imbriani et al., 2014; Lefebvre and Lefebvre, 2002; Majocchi et al., 2005). On the other hand, Love et al. (2015), Sousa et al. (2008) and Brouthers and Nakos (2005) found a negative relationship between firm age and international activities. In this study, it could be found that those middle-aged firms are more likely to export 54.3% than are young firms 26.1% and old firms 40%. The Uppsala model highlights the role of age in accumulating knowledge, resources and experience. Thus, as firms grow they learn-by-doing which fosters their ability to export. They gain knowledge about international market, customer needs and new technology. On the other hand, young firms face troubles in their early years which hinder their ability to engage in exporting activities. While some studies found that young firms were able to export from inception 'born global' (Crick, 2009; Knight and Cavusgil, 2004) this does not seem to be the case in Egyptian SMEs. Young firms face many challenges that affect their competition globally. However, old firms may have established their network and customer base domestically thus, not willing to take risk and export compared to middle-aged firms.

Moreover, a significant relationship between firm size and exporting was found $X^2(1, N=406)=101.6$, $p<0.05$ which is consistent with previous studies (Eusebio et al., 2007: Hall and Tu, 2004). Medium-size firms are found to be more likely to export 59.3% than small firms 3.6%. The greater the size advantage over the smaller firms will have a positive impact on the export activity (Alvarez, 2004; Tesfom and Lutz, 2006) as larger size can spread fixed costs and decrease the perceived risk of doing business. Furthermore, they have a wider pool of human capital resources which provides them with competitive advantage to compete in international market. Therefore, size is important for exporting activities and the need to study the determinants of growth in Egyptian SMEs is important for policy-maker to identify the factors contributing to the growth of firms which in return will encourage export activities.

In addition to that, a significant relationship between industry type and exporting was found $X^2(2, N=406)=50.4$, $p<0.05$. It could be found that those operating in high-tech firms are more likely to export 63.4% than low-tech firms 42.1% and others 8.5%. The result is consistent with previous work (Littunen and Niittykangas, 2010; Sterlacchini, 2001) which highlights the importance of such sectors in providing better products in global market. Engaging in international market requires competitive advantage and relies on innovation which is highly found in high-tech firms. Thus, enable them to perform better in international arena. On the other hand, for low-tech firms to export it must provide unique product, rely on niche market, cost leadership, or product differentiation to be able to tap international markets. Moreover, it was found that those

operating in high-tech firms have R&D and engage in research aiming at improving their production, process or marketing capabilities. This might explain their ability to provide a better product that is able to compete in international market compared to low-tech firms that depend on other strategies. However, there is no data regarding their investment in R&D and the output resulting from such activities which could have helped in investigating the difference in high- and low-tech firms. Table 5.13 presents the exporting activities by industry in the sample while Table 5.14 provides their R&D activities.

Table 5. 13 - Exporting in Egyptian SMEs - by Industry

Firm Industry	*No Export*	*Export*	*Total*
Low-tech *(agriculture, furniture, Textile/leather/garment, food)*	125	91	216
High-tech *(engineering/electronic/electric, pharmaceuticals/cosmetics, chemical)*	48	83	131
Others *(construction/alloy/ceramic)*	54	5	59
Total	227	179	406

Table 5.14 - Formal R&D in Egyptian SMEs Firms

Firm Industry	*No R&D*	*R&D*	*Total*
Low-tech *(agriculture, furniture, Textile/leather/garment, food)*	216	0	216
High-tech *(engineering/electronic/electric, pharmaceuticals/cosmetics, chemical)*	99	32	131
Others *(construction/alloy/ceramic)*	59	0	59
Total	374	32	406

On the other hand, owner characteristics were found to play an important role in the exporting activities of SMEs. Thus, a better understanding will be presented to investigate the relationship between exporting and owner characteristics. While the number of owner are considered to play an important role in firm exporting activities, a significant relationship was found in the Egyptian SMEs $X^2(1, N=406)= 43.9$, $p<0.05$. It could be found that those operating with more than one owner are more likely to export 64.7% than those who are operating alone 31.2%. Previous studies supported the effect of team management as they are able to pool resources, experience and knowledge which support them in international markets and leads to firm growth (Bridge et al., 2003).

Moreover, an investigation between gender and exporting activities was conducted where a significant relationship between both variables were found $X^2(1, N=406)= 18.4$, $p<0.05$. Thus, males are found to be more likely to export 47.9% than females 14.9%. It is suggested that males are more likely to be risk-takers, innovative and able to network in international market

compared to females. In the Egyptian culture, most females are at a disadvantage due to their dual responsibility and are risk adverse which affect their strategy to engage in exporting activities thus; mainly males engage in international market.

Furthermore, owner age was found to have significant relationship with exporting $X^2(2, N=406)=24.6$, $p<0.05$. It was found that older managers are more likely to export 63.1% than young 18.5% and middle-aged managers 39.5%. It is considered to be an important factor associated to export development. Older managers have more skills, experience, network, education and knowledge of international markets compared to younger owners. Such characteristics enable managers to perform better and have the experience to deal with problems facing them. However, previous studies found mixed results regarding the relationship between manager age and exporting. It was suggested that younger firms are more flexible, risk taker, motivated compared to older managers (Heshmati, 2001).

Education, an important factor affecting exporting, was found to significantly affect exporting $X^2(1, N=406)=77.9$, $p<0.05$ which was supported by previous studies (Ganotakis and Love, 2012 Roper et al., 2006). Those who have higher education are more likely to export 62.9% compared to diploma/institution 27.6% and minimum education 9.1%. Through education managers are introduced to a variety of disciplines that enhance their cognitive abilities and skills. It improves their communication, research and analytical skills enabling them to shape their business strategies according to market needs.

Meanwhile, experience was found to have a significant relationship with exporting $X^2(1, N=406)=4.4$, $p<0.05$. It was found that those who have less than 5 years of experience are more likely to export 48.9% than those who have more than 5 years of experience 38.5%. While SMEs have limited resources, experience is considered as an important factor in the manager's learning abilities enabling them to explore domestic and international markets (William, 2011). However, the results in the Egyptian SMEs found a different result as those who had less experience performed better. One explanation for this could be that the experience they have is not related to the industry they are working in thus, did not help them in their exporting activities. Future work might be helpful to understand whether the experience they have is linked to their industry operating in or another field.

The third category in this analysis is innovation, which was significantly related to exporting $X^2(1, N=406)= 21$, $p<0.05$ and in line with previous studies (Loof et al., 2015; Monreal-Perez, 2012; Nassimbeni, 2001; Van Beveren and Vandenbussde, 2010, Girma et al., 2008). It was found that those who are innovative are more likely to export 46.9% than those who are not innovating

25.1%. It is suggested that being innovative will increase the productivity of firms thus, will enable them to overcome sunk cost of exporting. They can better compete in international market by providing a superior product, process or marketing innovation. This was referred to as self-selection mechanism which was support by previous studies (Love and Ganotakis, 2013 Wagner, 2007; Greenway and Kneller, 2007).

Moreover, a probit regression is used to examine the significant effect of firm and owner characteristics on exporting activities of Egyptian SMEs (Table 5.15).

Table 5. 15 - Probit Regression, Firm and Owner Characteristics Effect on Exporting Activities in Egyptian SMEs

Variables	Coef.	Std. Err.	P>z
Independent Variables			
Firm (Sole Prop. owned)	0.06	0.53	0.91
Firm (Partnership owned)	0.10	0.32	0.76
Firm Age (Young)	0.25	0.30	0.42
Firm Age (Middle)	0.43	0.27	0.11
Firm Size (Small)	-1.6***	0.28	0.000
Firm Industry (low-tech)	1.7***	0.34	0.000
Firm Industry (high-tech)	1.5***	0.35	0.000
Owner Number	0.77	0.51	0.132
Owner Gender (Male)	1.23***	0.29	0.000
Owner Age (Young)	-0.92**	0.43	0.033
Owner Age (Middle)	-0.81***	0.22	0.000
Owner Education (High)	1.6***	0.32	0.000
Owner Education (Medium)	0.86***	0.22	0.009
Owner Experience (High)	-0.21	0.17	0.22
_cons	-3.6	0.74	0.000
Number of obs	406		
LR Chi-square	256.04		
Pro> Chi-square	0.000		
Pseudo R2	0.46		
Log likelihood	-150.55		

Note: Estimated by probit model. Level of significance ***1%, **5%, *10%

The model has a pseudo R^2 of 0.46 and is significant at 0.01 level. The results of the probilt regression indicate that firm size (small) has a negative significant effect on exporting activities. This result is consistent with previous studies which found that the lack of resources affects the exporting capabilities of firms. Small firms that are resource-poor are more vulnerable to sunk costs thus, are discouraged to export (William, 2011). Moreover, most small firms suffer from lack of information regarding foreign market which in return hinders their ability to export. Thus, policy-makers have to provide SMEs with necessary information and links with international market to overcome their size problem.

In addition to that, firm industries (low-tech and high-tech firms) were found to have a positive significant effect on export activities. While Table 5.12 found that 'high-tech' firms are more likely to export, in the probit model both low- and high-tech firms affect the exporting activities. Previous studies suggested that there is a difference between high-tech and low-tech firm on exporting though both must provide a unique competitive advantage. However, it could be found that their coefficients appear to be the same size within a single standard of error. The main reason for that refers back to how both is defined and what high-tech firms means in the Egyptian context. In this study firms were grouped according to their similar characteristics however, future study will need to focus on each industry individually to see the significant effect of each industry on exporting.

There is a need to deepen the understanding about low-and high-tech SMEs in Egypt and investigate if there are any differences when it comes to exporting. Variations in the firm activity may play an important impact on the exporting activities of the firm thus, more insight is needed to investigate how different industries vary in international market. The differences among high and low-tech firms depend on the product life cycle, mature versus new developed products. While, high-tech firms are characterised by new products and shorter life cycles, low-tech firms can move from maturity stage to rapid growth by addressing new customer needs. The latter may keep their products in the introduction phase by doing R&D giving new reasons for customers to purchase. Although low-tech products do not involve technologies that can be described as 'cutting edge' or most advanced , some studies consider them as high-tech activity if the production would have been characterised of mass-production and produced in technology intensive machines not available in well-known market channels (Atmer and Thagesson, 2005).

Moreover, it is interesting for future studies to address whether the advantage of first mover influence the exporting behaviour of low-and high-tech firms and how firms can gain competitive advantage according to the principles of transactional cost. Furthermore, it will be helpful to know how quickly they launch their products to reach international markets, their tendency to

approach different market and annual sales to better differentiate between both industries. Therefore, there is a need for a definitive description of the attributes connected to high-and low-tech firms in the Egyptian SMEs.

Moreover, gender (male) was found to have a positive and statistically significant effect, meaning that males are more likely to export than females. Males are suggested to be more risk takers and can better operate in international market. In the Egyptian culture, females are at a disadvantage due to their dual responsibilities they face from household and family. As exporting needs commitment, communication, exploiting opportunities and attending continuously trade fairs, females might find this difficult due to their responsibilities.

Furthermore, both owner ages (young and middle) were found to have a negative significant effect on exporting. From the chi-square results, it was found that older managers are more likely to export. Older managers significantly affect exporting as they have more experience, network and familiar with routine work which foster their exporting activities. This experience enables them to understand the foreign market better and overcome problems faced. Moreover, a chi-square was performed which found that older firms are more likely to innovate and have higher education which reflects their ability to learn from international markets and modify their products accordingly. On the other hand, young managers may still have problem in accessing formal and informal networks thus, hindering their exporting activities. Thus, policy-makers have to help those firms by giving them support, access to overall low cost factors of production, accessing to formal/informal network and accessing a big supply chain.

Finally, education (high and medium) was found to have a positive significant effect on exporting. This means that both levels are more likely to export than those who have (minimum or no education) which highlights the importance of education for firm exporting activities. A chi-square relation was performed earlier where higher-education (53.6%) was more likely to be found in high-tech firms and 75.8% of the medium education was found in the low-tech firm. Thus, the nature of the firm is associated with the level of education. Those located in low-tech firms does not require higher education but depend more on human skills that helps in modifying products and process innovation. Nevertheless, the high-tech firms depend more on research and technological updates to modify their products which is supported by the findings where all those who have R&D are located in high-tech firm (Table 5.14).

In conclusion, it could be found that different firm and owner characteristics play a significant effect on firm exporting in Egyptian SMEs. However, future research is needed to develop a more critical definition of high-and low-tech firms in the Egyptian context and focus more on

each industry to better understand their impact on exporting activities. Furthermore, policy-makers should support SMEs by linking them with international market through networks and information.

The probit regression model is an important tool in assessing the impact of a set of predictors (firm and owner characteristics) on the dependent variable (Exporting activities). It gives a better understanding of the variables that significantly affect the SMEs exporting activities in the Egyptian sample. While R^2 tells how much of total variance is explained, there are other ways to assess whether or not the model fits the data by testing the 'goodness-of-fit'. The test assess whether or not the observed event rates match expected event rates in subgroups of the model population (Weiss, 2012).

Table 5.16 presents the 'percentage of correct proportions', which presents the correctly and incorrectly predicted results of the model. In addition to that, it presents the measurement of goodness-of-fit (Hosmer-Lemeshow) test which is used to determine the goodness-of-fit of the probit regression model.

Table 5.16 - Measurement of 'Percentage of Correct Proportions' and Goodness-of-fit for Exporting

Classified	D	~D	Total
+	145	36	181
-	34	191	225
Total	179	227	406

Classified + if predicted Pr(D)>.5 True D defined as Export =0		
Sensitivity	Pr (+|D)	81.01%
Specificity	Pr (-|~D)	84.14%
Positive predictive value	Pr (D|+)	80.11%
Negative predictive value	Pr(~D|-)	84.89%
False + rate for true ~D	Pr(+|~D)	15.86%
False - rate for true D	Pr(-|D)	18.99%
False + rate for classified +	Pr(~D|+)	19.89%
False - rate for classified -	Pr(D|-)	15.11%
Correctly classified		82.76%

Probit model for Exporting, goodness-of-fit test
Number of observations= 406
Number of covariate patterns= 194
Pearson chi2 (179)= 354.82
Prob > chi2 = 0.000

The result from Table 5.16 shows that the overall rate of correct classification is estimated to be 82.76% with 84.14% of the normal weight group correctly classified (specificity) and 81% of the low weight group correctly classified (sensitivity). It could be found that of the 179 firms that were exporting, the model was right about 145 and out of the 227 firms who were not exporting, the model correctly predicted that 191 would not but 36 would. However, the goodness-of-fit gives a $p<0.05$ which indicates a poor fit of the model.

5.3.4.1 Firm Distribution Channel

There are two different types of exporters, direct and indirect. Direct exporters deal directly with foreign buyers while indirect exporters use an export intermediary who assumes responsibility for finding overseas buyers. SMEs can choose between those types based on the size of the firm, the nature of its products, business conditions in the selected overseas market, previous experience and expertise. While direct exporters have more control on export process, high profits and closer relationship between buyer and marketplace, indirect exporters provides a way to penetrate foreign markets without the complexities and risk of direct exporting. Small firms choose between different types based on their level of experience, knowledge and resources. Direct exporting is found to be effective as it keeps new customers satisfied and builds loyalty on the other hand; distributors are able to provide support and service for the product and relieving the export company from these responsibilities. Table 5.17 presents the different distribution channels that Egyptian SMEs undertake when engaging in international markets. However, future research is needed to investigate the interested markets they export to. Previous studies highlighted the importance of psychic distance for SMEs as they share same characteristic and language. Thus, it could be a useful indicator for practitioners and policy-makers for providing information and knowledge.

Table 5.17 – Distribution Channel in Egyptian SMEs Exporters

Distribution Channel of Exporters	*Frequency*	*Percentage*
Sell direct to customers	41	22.9
Local agent/agent in overseas	89	49.7
Distribution in overseas market	49	27.4
Total	179	100

The result in Table 5.17 shows that 49.7% of exporters sell their products through local and overseas agent. As SMEs suffer from lack of knowledge in international markets, agents provide them with the knowledge about target market and opportunities. They introduce firms to

customers to supply them with products and build relationships with buyers. This distribution channel encourages firms to export as they are able to penetrate foreign markets through the agents. Although agents receive commission on transactions, SMEs find it a less risky way to reap the profit from foreign markets.

On the other hand, only 22.9% were able to sell directly to customers. Those firms were found to be more likely to grow than other channels. Being close to customers and markets, firms can modify their products and find more opportunities leading to their growth.

The third channel was 'distribution in overseas market' which represents 27.4% of the sample. However, the disadvantage of the distributor is that they take title of goods and resell it but, this might be the only strategy for SMEs to export due to their limited knowledge, resources and experience.

Another barrier for engaging in global market is size, the results in Table 5.18 shows that medium firms were able to export through different distribution channels representing 98% of exporters while small firms have difficulties.

Table 5.18 - Distribution Channel in the Egyptian SMEs with respect to Firm Size

Distribution Channel / ***Firm Size***	***5-14 employees***	***15-50 employees***	***Total***
Sell direct to customers	1	40	41
Local agent/agent in overseas	3	86	89
Distribution in overseas market	0	49	49
Total	4	175	179

Moreover, in this study, 91% of SMEs considered marketing, knowledge and promoting exporting as an important factor in triggering exporters. One of the barriers that face firms and hinder their activities and performance abroad is the lack of market knowledge. It is suggested that the more the knowledge about the market, the more the firm will be able to increase its commitment abroad. Thus, knowledge increases the opportunities to evaluate alternatives in the international activities as the information about the market and operations affect firms' decision to engage abroad. This is supported by the Uppsala model which highlights the role of knowledge acquisition in shaping the decision and commitment for the firm to internationalise. As firms engage in international activities gradually, knowledge and learning are acquired along the process. Thus, reduces the risk and enable firms to identify more opportunities or even problems facing them during their activities in foreign market to overcome later, resulting in a feedback loop (Johanson and Vahlne, 1977, 1990).

Therefore, the role of policy-maker in providing support to exporting firms is important as they were found to affect growth positively. They could provide them with market knowledge where the more firm know about the market, the less will be the risk for investment and commitment. According to Penrose work (1959) there are objective and experiential knowledge. The objective knowledge is the one that is taught and the experiential is the one which is acquired through personal experience. The objective knowledge is acquired through collection of information via market research and the experiential knowledge could be acquired from trade fair, market visits as well as missions but, costly compared to the objective one. Therefore, policy-maker could help SMEs by providing them with:

- Business Knowledge: knowledge about customers, market conditions, competitors in the foreign market.
- Institutional Knowledge: knowledge about institutional and government rules in foreign market which is gained through current activities.
- Internationalisation Knowledge: knowledge about firm resources and capabilities for entering foreign market.

5.3.4.2 Firm Exporting Age

Table 5.19 shows how long firms have been engaging in exporting activities. The years of establishment of the firms are divided into three categories: 5 years or less, 6-10 years and 11-22 years. However, the majority of exporting firms are within the 6-10 years category representing 70.4% of total exporting firms. While their exporting age was divided into three categories: 1-3 years, 4-7 years, and 8-12 years of exporting. On average, the majority of sampled firms are exporting within the (4-7 years of exporting) nearly 50.8% of the sample.

Table 5. 19 - Firm Age and Exporting Age Profile of Respondents

Firm Age / ***Exporting Age***	***1-3 years***	***4-7 years***	***8-12 years***	***Total***
Young (5 years and less)	27	3	0	31
Middle (6-10 years)	34	81	11	126
Old (11-22 years)	1	6	15	22
Total	62	91	26	179

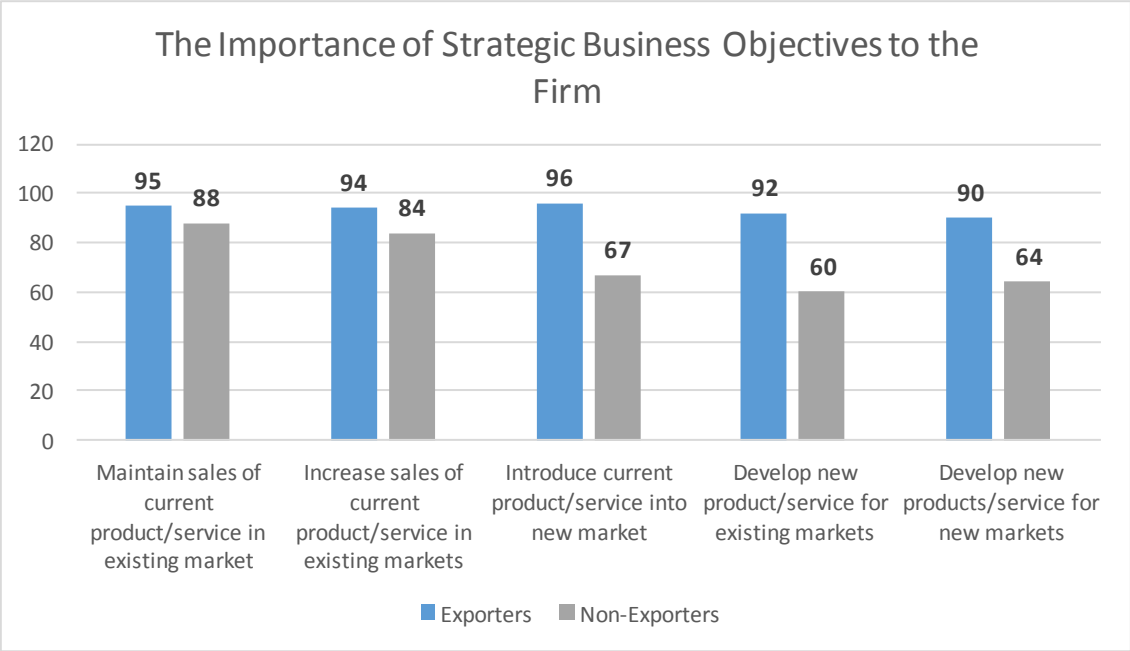
The young Egyptian firms that started their firms have been exporting within (1-3 years), representing 43% of total firms that were exporting. This result is consistent with the ‘born global’

phenomena which found that some small firms start exporting from inception (Oviatt and McDougall, 1994; McDougal et al., 1994; Andersson et al., 2004; Aspelund et al., 2007; Westhead, 2008). However, there are 34 firms that have been established within (middle-age firms) but started their exporting activities within the (1-3 years) category. Those firms depend primarily on the local customers in their early stages then engaged in exporting activities after developing across the stage model. This result could be due to the high cost associated with exporting that constrain their early activities. In Egypt, the tax imposed by the government on firms and bureaucracy are one of the factors that hinder the exporting activities of firms. Moreover, increase in competition in foreign country, lack of government incentives, lack of knowledge of potential export markets, high values of dollar, lack of staff for exporting planning, difficulty in marketing products and matching with competitor price and quality are considered to be the main export barriers facing the Egyptian SMEs in global marketplace (Hassan, 2012).

5.3.4.3 Firm Strategic Objectives

It was important to understand the strategic objectives of exporting and non-exporting firms to better understand the difference among them therefore, a list of questions about their strategic objectives were provided on a Likert Scale to capture their firm objectives. The first question was about the importance of 'Maintaining sales of their current products or services in existing markets' where 95% of exporters found it important for their firm's objectives compared to 88% in non-exporters. Secondly, 'Increasing sales of their current products or services in existing markets', 94% of exporters found it important for their firms while 84% in non-exporters found it important. Thirdly, 'Introducing current products or services into new markets' where 96% of exporters found it important compared to 67% in non-exporters. Fourthly, 'Developing new products or services for their existing markets' 92% of exporters found it important while only 60% of non-exporters found it important. Finally, 'Developing new products or services for new markets' where 90% of exporters found it important for their firms compared to 64% of non-exporters. Overall, it could be found that the importance of each strategic objective was more important in the exporting firms compared to non-exporting firms. Exporters are more concerned with introducing products in new market and developing new products for new market which is vital for firm's survival and enable it to compete in foreign market. Figure 5.3 below shows a comparison between exporters and non-exporters with respect to different firm's strategic objectives.

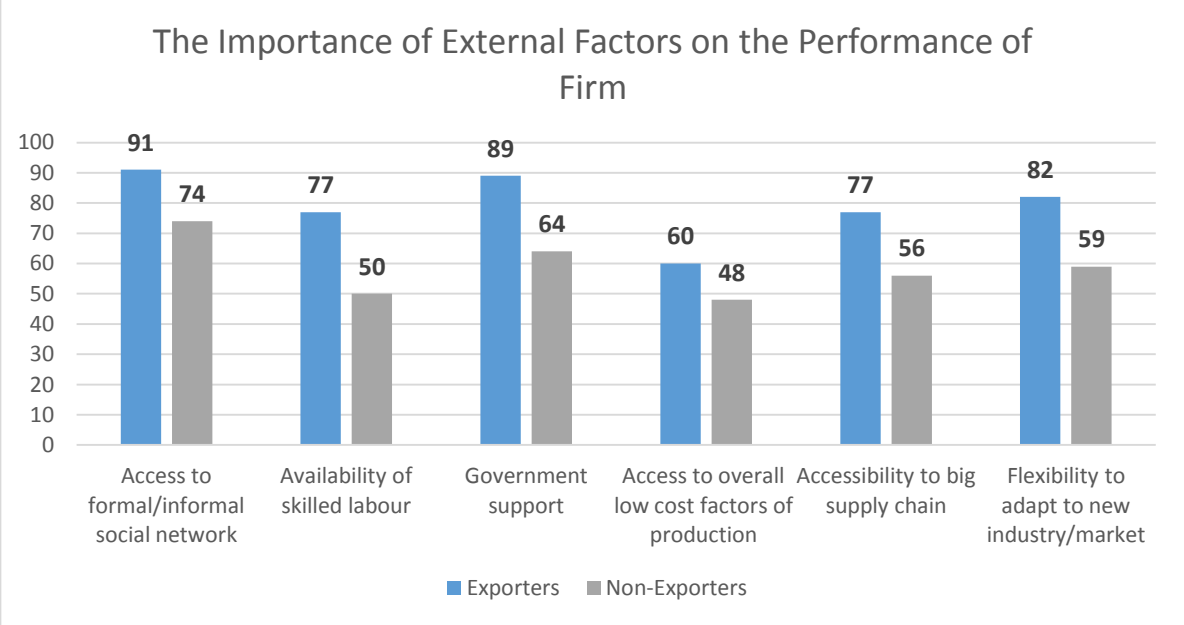
Figure 5. 3 - The Importance of Strategic Objectives to Exporters and Non-Exporters



5.3.4.4 External Factors Effect on Firms Performance

This section will investigate the importance of some of the external factors on firm performance. Figure 5.4 shows a comparison between exporting and non-exporting firms that perceived the list of factors given as significant to the firm.

Figure 5. 4 - Importance of External Factors on Firm's Performance in Exporting and Non-Exporting Firms



The first factor was the importance of 'Access to formal and informal social network (links with counterparts such as suppliers, service provider or government)' to the firms. It was found that 91% of exporting firms find it important which is consistent with the literature regarding network model compared to 74% in non-exporting.

The second factor was 'Availability of skilled labour' where exporting firms find it important for their firm's performance representing 77% compared to 50% for non-exporters.

Thirdly, 'Government support (financial/Marketing/training support, regulations/policies)', which was important for exporting firms representing 89% compared to 64% for non-exporting firms. During the 25th January 2011 revolution, the government role and programmes in supporting SMEs had declined as well as their performance. Some of the governmental policies, such as regulations, bureaucracy, and taxation are affecting the growth of firms. Egypt among other geographic regions has the lowest mean score of 2.03 which reflects the low level of entrepreneurial conditions supporting them. On the other hand, the 'Ease of Doing Business' Index for 2012 identified government policies and regulations as one of the difficulties that face firms when starting a business in Egypt. In this index, Egypt has a rank of 131 among the 189 countries participating (The World Bank, 2012).

Fourthly, 'Access to overall low cost factors of production' where 60% of exporting firms find it important for their performance relative to 48% in non-exporting firms. One of the disadvantages of small and medium-sized firms is the lack of resources that hinder their performance. Therefore, accessing a low cost of production will help those firms to export and make use of their production advantages for growth.

Fifthly, 'Accessibility to big supply chain', which provides a good opportunity for small firms to be part of larger firms by supplying products for them. Small firms could have a direct influence on big businesses by acting as an important source of outsourced supply, skills, and services. Thus, they could influence the success of big businesses by providing vital supply chain services. The results find 77% of exporters perceive it important for their performance compared to 56% for non-exporters.

Finally, the 'Flexibility to adapt to new industry and market' found that 82% of exporters find it important compared to 59% for non-exporters. One of the advantages of small firms is their ability to adapt to changes in the market. Alternatively, large organisation structures hinder their respond to change quickly; while in small firms, due to their small structure, it is easy to respond

to such change quickly grasping any opportunity around. For those exporters it is vital to adapt to changes and be flexible due to the high competition locally and internationally thus, failing to do so will affect the firm's performance.

5.3.4.5 Firm Sales over the Last 12 Months

During the period of collecting data 2012-2013, firms were asked about their export, total sales, and profit. Due to the sensitivity of the questions they were asked to indicate whether their sales had decrease, increased, or the same within this period. It was found that 51% of exporting firms had an increase in exporting sales, while 52% had an increase in total sales and 54% had an increase in their overall profit. When compared with those who were non-exporters, it could be found that exporting was an important factor that affected their overall sales. In non-exporters, only 13% had an increase in their total sales and 12% had an increase in their profit. However, this poor performance of non-exporters could be due to the revolution effect on the economic situation in Egypt.

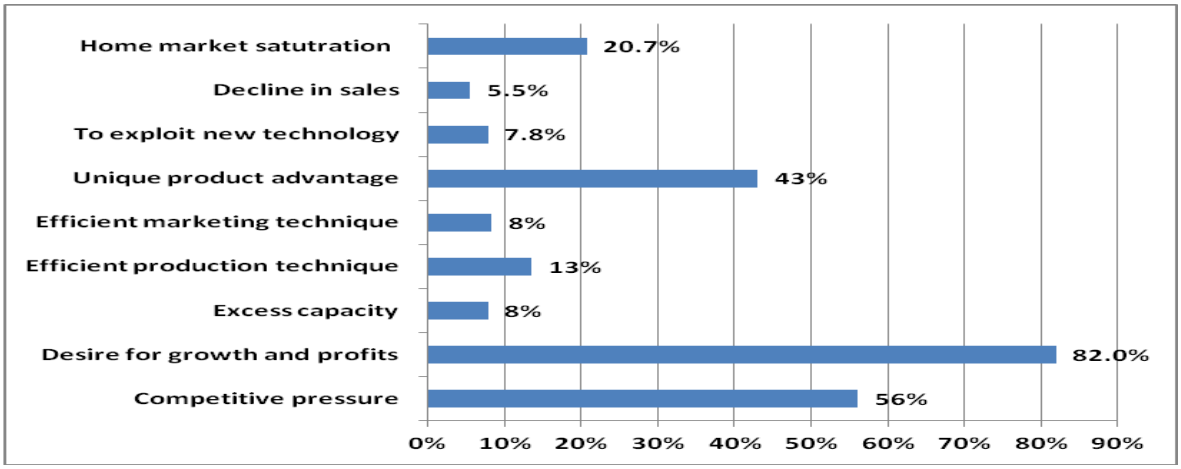
5.3.4.6 Factors Triggering Non-Exporters to be Exporters

Those firms were asked about the support they need in order to start their exporting activities. It was found that 52% of non-exporters need government support, 64% need economic and legal support, 64% need information and financial support, 57% needs functional support (skilled labour, technology), and 91% need marketing support for promoting exporting. These results are important for policy makers in order to identify the weakness that non-exporters face and try to facilitate supporting system for them.

5.3.4.7 Promoting Firms to Export

This section provides an insight on the factors that promoted firms to export. It was found that the majority of exporters are promoted due to 'desire for growth' factors which was 82% followed by the 'competitive pressure' representing 56% and 'unique product advantage' 43%. Figure 5.5 below shows the different factors that encouraged exporting firms to engage in global market place.

Figure 5. 5 - Factors Promoting Exporters to Engage in International Market

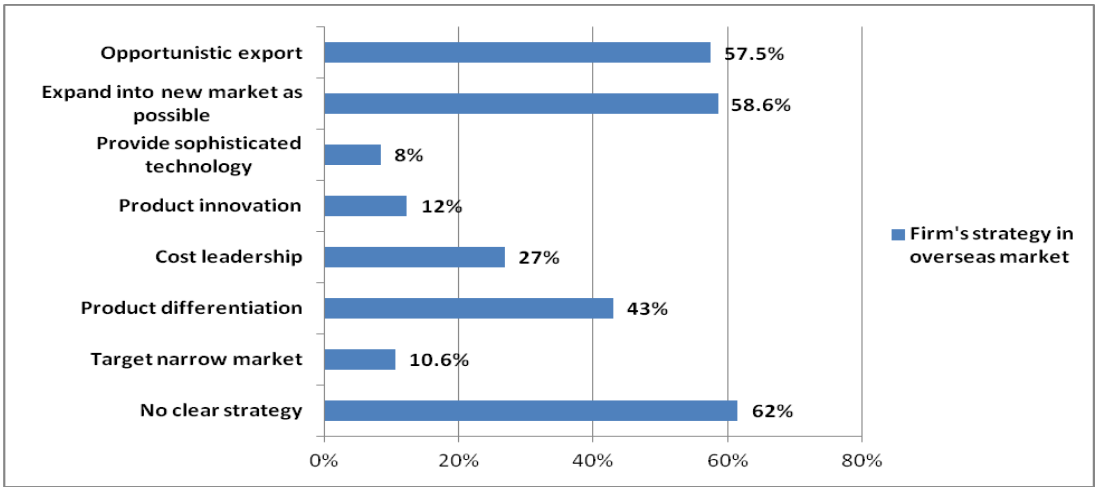


5.3.4.8 Firm Strategy Overseas

Small firms have different strategies in order to reach global market. It could be found that the majority of exporting firms have no clear strategy in overseas market (62%). However, this could be due to the lack of awareness on marketing and management activities. On the other hand, 57.5% find expanding into an overseas market as an 'opportunity', while 58.6% found it a mean of expanding into new market as much as they can. Regarding the relationship between innovation and exporting, it could be found that 12% of those who are exporting rely on 'innovation' as a mean to penetrate new markets. Thus, reflecting a weak influence of innovation on exporting. Firms could export without having an innovative product but could be of good quality 'product differentiation' which represented 43% of the exporters.

Figure 5.6 shows the different strategies that SMEs utilise to reach international market and their percentage within each strategy.

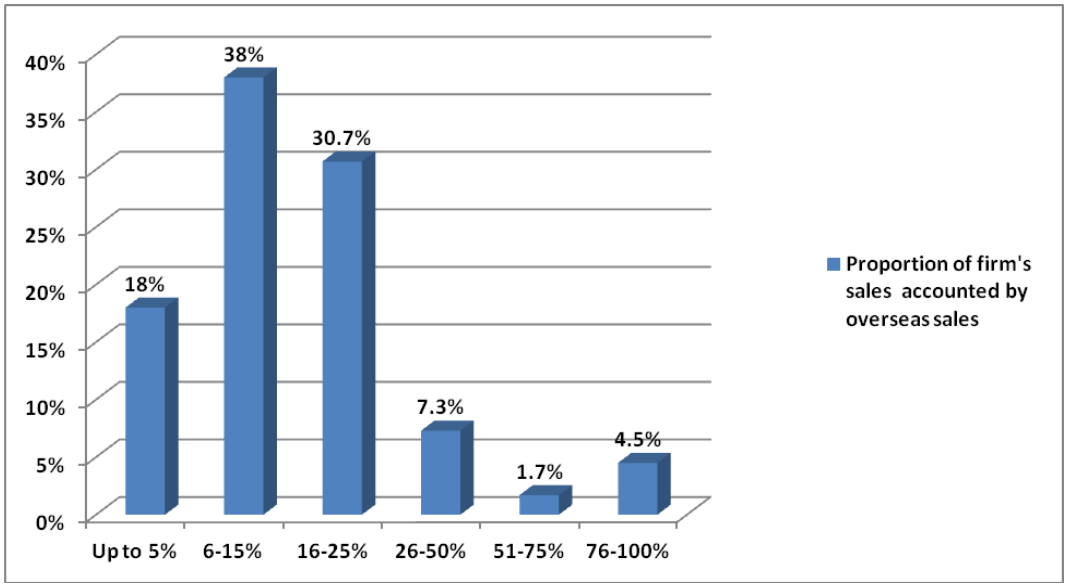
Figure 5. 6 - Firm Strategy in Overseas Market



5.3.4.9 Proportion of Firm Current Sales Accounted for by Overseas Sales

Figure 5.7 below shows the proportion of firm's current sales accounted for by overseas sales. It could be found that 38% of exporting firms had sales accounting for 6-15% by overseas followed by 30.7% for 16-25%. These percentages reflect the benefits the firm gains from exporting. By selling abroad, they will be able to access foreign currency and open a new market.

Figure 5. 7 - Proportion of Firm Current Sales Accounted for by Overseas Sales



5.3.4.10 Management Perception

Owners' decision to engage in international market is conditioned basically by their attitude to exporting (Sonia et al., 2005). The classical economic theory suggested that the probability to export is highly related to expected profits (Bilkey, 1978). However, this perception differs from exporter and non-exporters. Exporters were found to perceive higher potential profits from exporting than those non-exporters (Cavusgil, 1984; Morgan, 1997). In this sample, the results were consistent with the literature as 96% of those who were exporting perceived 'benefits from exporting' as very important. On the other hand, both exporters and non-exporters generally perceive exporting as 'risky but benefits high' as important. In conclusion, it could be found that the export behaviour of firms is associated with the decision maker's perception towards risk, profit and cost.

5.3.5 Profile of Innovative Firms

Innovation was found to affect the growth and exporting activities of firms (Ganotakis and Love, 2012; Golovko and Valentini, 2011; Cassiman and Golovko, 2007; Freel and Robson, 2004; Roper and Love, 2002). Thus, it is important to investigate the innovation activities in the Egyptian SMEs to better understand their behaviour and provide recommendation for policy-makers. Most importantly is how innovation will be defined in the Egyptian context. It was very difficult to find a unified definition for innovation in the Egyptian context thus; the Oslo manual definition was adopted being a universal standard. Innovation is defined in this study as those firms who introduced products (e.g. improving or creating new products), processes (e.g. business models, new ways of working or methods for supplying goods or services, introducing computer-based production applications, automated materials, introducing manufacturing information system) and/or marketing innovation (new pricing methods, distribution methods, new sales approaches). However, more work is needed to develop what innovation really means in the Egyptian context. Thus, future studies could use qualitative methods to develop such definition and use focus group to develop a grounded theory enabling future comparison between Western countries and Egypt. Moreover, data regarding the sales share of the new product developed and R&D investment will be helpful to investigate the importance of innovation to SMEs in Egypt.

Due to the lack of data regarding the innovation activities in firms, a whole section was developed in the questionnaire to capture their innovation and R&D. Out of the sample of 406 SMEs, 141 firms were innovating representing 35% of the total respondents. However, only 32 firms had R&D. Table 5.20 shows the different types of innovation in the Egyptian sample. In the questionnaire, innovation activities were divided into three categories, the product, process, and marketing innovation and were asked whether they introduced new or significantly improved products, process and marketing innovation. They were able to choose more than one type of innovation with respect to their activity.

Table 5.20 – Innovation Types Frequency in SMEs

Innovation Types	Frequency	Percentage of Total Innovators
Product Innovation	123	87
Process Innovation	74	52.5
Marketing Innovation	66	46.8

These results are consistent with the literature as the majority of firms were found to engage in product innovation rather than process and marketing types. The main reason is that product

innovation is tangible and is created to satisfy new customers leading to increase in market shares and sales.

Moreover, a chi-square of independence test was performed to better understand the relationship between innovation and different firm and manager characteristics in the Egyptian SMEs sample. Table 5.21 represents a summary of the results from the test.

Table 5.21 - Chi-Square of independence Test between Independent Variables and Innovation Activities in Egyptian SMEs

Concept Group	Independent Variables	Results of more likely to innovate
Firm Characteristics	Firm Structure	Partnership
	Firm Age	Middle-aged
	Firm Size	Medium-Sized
	Firm Industry	High-tech
Owner Characteristics	Number of Owners	More than 1 owner
	Owner Gender	Male
	Owner Age	Not Significant
	Owner Education	Managers with high Education
	Owner Experience	Those who have more than 5 years
Exporting Activities	Exporting	Exporting firms

In this study, a chi-square of independence was performed between firm ownership types and innovation. A significant relationship between firm ownership structure and innovation was found, $X^2(2, N=406) =16.9, p<0.05$. Partnership type is more likely to innovate 49.6% than are limited firms 33.3% and sole proprietorship 27.7%. Under such structure, managers are able to pool resources, share experience, skills and network which facilitate their ability to innovate. However, there is scarcity of studies focusing on the effect of different types of structure on the innovation of activities in SMEs.

As for the firm age, a significant relationship between firm age and innovation was found $X^2(2, N=406) =9.6, p<0.05$ which is consistent with previous studies (Davidsson and Wiklund, 2000). The results found that those middle-aged firms are more likely to innovate 40.1% than are young 23.5% and old firms 36.4%. They are able to accumulate more resources than younger firms enabling them to perform better, have more ideas and are more flexible than older firms thus, can adapt to customer changes.

Moreover, a significant relationship between firm size and innovation was found $X^2(1, N=406)=13.2, p<0.05$ which is consistent with previous studies (Avermaete et al., 2003; Bhattacharya and Bloch, 2004). Medium-size firms are found to be more likely to innovate 40% than small firms 20.7%. Since innovation depends on the availability of resources, larger firms

were found to have better access to resources, skills and knowledge which enable them to exploit new technology and hire more expertise. As a result of accumulation of resources, they are able to better perform and innovate compared to smaller firms.

In addition to that, a significant relationship between industry type and innovation was found $X^2(2, N=406)=46.7$, $p<0.05$. It could be found that those operating in high-tech firms are more likely to innovate 55.7% than low-tech firms 29.2% and others 8.5%. The result is consistent with previous work (Furman et al., 2002) which highlights the importance of firm nature on its competitiveness. Those who operate in high-tech firms rely more on technology and research updates to provide better product. For example, pharmaceuticals and IT firms depend more on technology compared to furniture and textile industries. However, there is a call for future study to develop a critical definition of innovation and high-and low-tech firms in the Egyptian context.

On the other hand, owner characteristics were found to play an important role in SMEs innovation activities. A significant relationship was found between the number of owners and innovation in the Egyptian SMEs $X^2(1, N=406)= 14.6$, $p<0.05$. It could be found that those operating with more than one owner are more likely to innovate 46.2% than those who are operating alone 31.2%. It was suggested that the team will be able to accumulate skills, education, experience and knowledge which will help them to exploit new ideas. However, those operating individually might suffer from lack of resources thus, hinders their innovation capabilities in their earlier stage.

Furthermore, a significant relationship between gender and firm innovation was found $X^2(1, N=406)= 4.2$, $p<0.05$. The results found that males are more likely to innovate 36.5% than females 21.3% which is consistent with previous work suggesting that males assume high innovation than females (Blake and Hanson, 2005).

However, there is no significant relationship between owner age and innovation $X^2(2, N=406)=3.5$, $p>0.05$.

Furthermore, education was found to significantly affect innovation $X^2(2, N=406)=47$, $p<0.05$ which was supported by previous studies (Martinez-Roman and Romero, 2013; Hadjimanolis, 2000b; Roper, 1998). Those who have higher education are more likely to innovate 48.7% as they are suggested to better assimilate new technologies and contribute in providing better products. Through education, managers are introduced to a variety of disciplines that enhance their cognitive abilities and skills and enable them to innovate.

Meanwhile, experience was found to have a significant relationship with innovation $X^2(1, N=406)= 2.8$, $p<0.1$. It was found that those who have more than 5 years of experience are more

likely to innovate 39% than those who have less than 5 years of experience 31%. The level of innovativeness and knowledge is associated with experience (Gray, 2006) which helps in maintaining resources and help in the way of solving problems.

The final category in the test is exporting, which was significantly related to innovation $X^2(1, N=406)= 21, p<0.05$ and in line with previous studies (Lööf et al., 2015; Monreal-Perez, 2012; Nassimbeni, 2001; Van Beveren and Vandenbussde, 2010, Girma et al., 2008). Those who are exporting are more likely to innovate highlighting the importance of learning-by-doing effect.

In conclusion, innovation is considered as an important factor affecting the growth of firms thus, it was important to study the factors underlying it. The results of the chi-square test highlight the importance of firm and owner characteristics and a clearer understanding of the Egyptian SMEs were presented in Table 5.21.

5.3.5.1 Innovation Activities in Egyptian SMEs

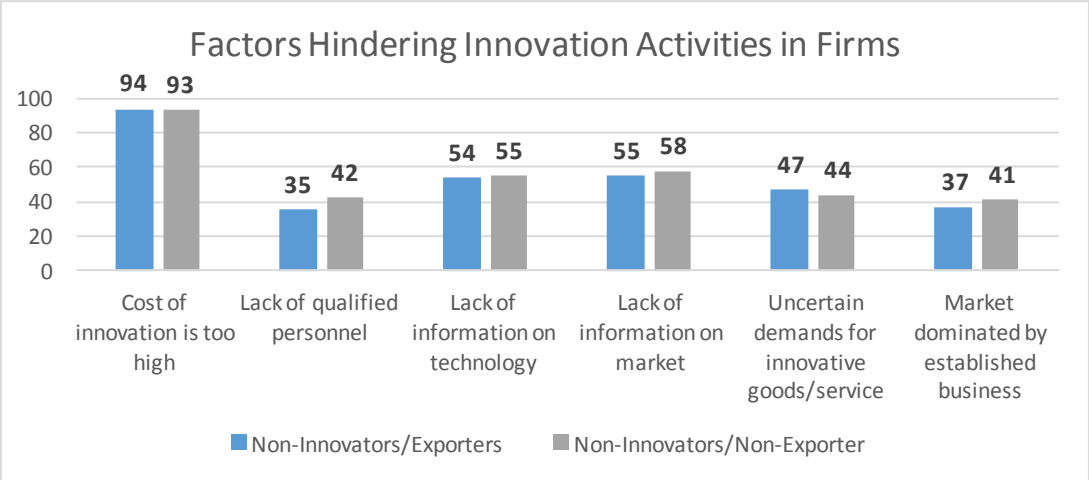
Innovation is an important factor for firm exporting activities. Literature had found a positive relationship between exporting and innovation (Salim and Bloch, 2009; Roper et al., 2006; Harris and Li, 2009). Meanwhile, from the total sample of 406 Egyptian SMEs, it could be found that 20% of the sample are engaged in both innovation and exporting activities (Table 5.22). Moreover, 47% of those who are exporting are innovative. On the other hand, the majority of those who are exporting and innovating are engaged in 'product innovation' 88%, while 60.7% are engaged in 'process innovation', and 57% are engaged in 'marketing innovation'. This is consistent with previous studies where most exporting firms are engaged in product innovation.

Table 5. 22 - Export and Innovation Activities Profile of Respondents

Exporting / ***Innovation***	***No Innovation***	***Innovation***	***Total***
Non- Exporter	170	57	227
Exporter	95	84	179
Total	265	141	406

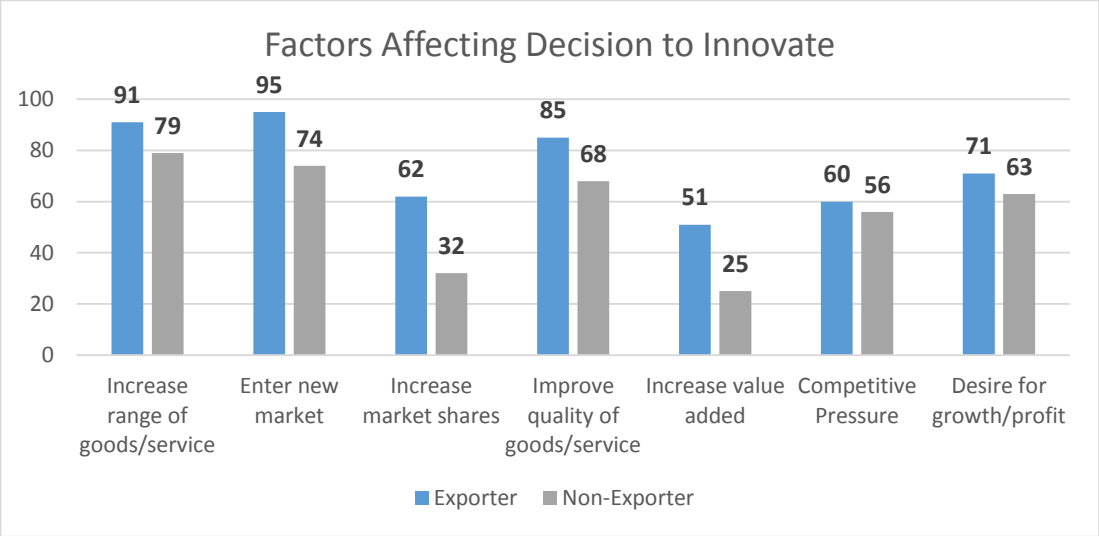
Furthermore, the majority of exporters that did not innovate were due to 'factors constraining their innovation activities'. The respondents had a list of factors that hinder their innovation activities and they had to indicate on a scale which factor hinders their innovation. Figure 5.8 below shows the results of factors hindering the innovative activities in exporting firms.

Figure 5. 8 - Factors Hindering Exporters and Non-Exporters Innovation Activities



From Figure 5.8, it could be found that both exporters and non-exporters that engage in innovative activities share almost the same percentage regarding the factors hindering their innovation. While the above results were the main factors hindering the innovation of exporting firms, the results in Figure 5.9 are the main factors that foster innovation and encourage the decision to innovate in exporting firms.

Figure 5. 9 - Factors Affecting Innovation Decision in Exporting and Non-Exporting Firms



The first factor is ‘increasing range of goods and services’, where 91% of those exporting find it very important for their innovation decision. The second factor is ‘entering new markets’ which represented 95% of those exporting. They find innovation very important in order to enter a new market which is consistent with the literature regarding the relationship between innovation and exporting. The third factor is ‘increasing market shares’, where 62% of exporters find it

important. The fourth factor is ‘improving quality of goods and services’ where 85% of exporters identified it to be important for their innovation activities. It is important to improve the quality of the product/service offered in new market to compete with other products. The fifth factor is ‘increasing value added’ where only 51% of those exporters were motivated to innovate. The sixth factor is ‘competitive pressure’ where 60% of exporters find innovation important due to competitive pressure which faces them internationally and locally. Finally, ‘desire for growth and profit’, where 71% of those exporting find innovation important as it helps them to grow.

5.3.5.2 Innovation Activities and Independent Variables in Egyptian SMEs

Moreover, in order to better understand the factors explaining the innovation activities of the sample, Table 5.23 presents a probit model integrating the firm and owner characteristics and their effect on innovation activities.

Table 5. 23 - Probit Regression- Firm and Owner Characteristics effect on Innovation Activities in Egyptian SMEs

Variables	Coef.	Std. Err.	P>z
Independent Variables			
Firm (Sole Prop. owned)	0.18	0.52	0.73
Firm (Partnership owned)	0.28	0.27	0.30
Firm Age (Young)	-0.35	0.26	0.17
Firm Age (Middle)	-0.25	0.23	0.28
Firm Size (Small)	-0.15	0.19	0.44
Firm Industry (low-tech)	0.89**	0.29	0.002
Firm Industry (high-tech)	1.32***	0.30	0.000
Owner Number	0.15	0.50	0.77
Owner Gender (Male)	0.42	0.26	0.10
Owner Age (Young)	0.13	0.34	0.70
Owner Age (Middle)	-0.27	0.17	0.12
Owner Education (High)	0.40*	0.23	0.09
Owner Education (Medium)	-0.49*	0.25	0.05
Owner Experience (High)	0.34**	0.15	0.02
_cons	-1.8**	0.69	0.009
Number of obs	406		
LR Chi-square	95.98		
Pro> Chi-square	0.0000		
Pseudo R2	0.1825		
Log likelihood	-214.19		

Note: Estimated by probit model. Level of significance ***1%, **5%, *10%

The model has a pseudo R^2 of 0.18 which is significant $p<0.001$. It could be found that industry 'low and high-tech' significantly affect innovation. However, their probit coefficient appears to be the same size within the innovation probit regression, similar to the case in exporting probit regression. Thus, there is a need to develop a better understanding of different types of industries and provide a definition for each to be able to examine their effect on innovation. There is a need to distinguish between different types of industries, products produced, level of innovation, sales return and to what extent they rely on innovation in their production. While, high-tech firms depend on innovation in their production more than those who are in low-tech firms, both provide unique product that enable them to compete in domestic and international market. They might provide a new or modified product, process or marketing that could be new to the market or to the firm they are operating in.

On the other hand, 'high education' was found to significantly affect innovation activities in SMEs positively. The results are consistent with previous studies which highlights the importance of education in shaping the cognitive ability and skills of managers (Martinez-Roman and Romero, 2013; Hadjimanolis, 2000b; Roper, 1998). Education helps in assimilating new technologies which in return lead to improving the products developed and the way in marketing them. Furthermore, it plays an important role in delivering skilled and innovative managers as improved innovation capacity requires better education (Goldbach, 2012). Therefore, education leads to fewer capital constraints thus, better performance. On other hand, those who have diploma/institution education were found to significantly affect innovation in a negative way. The level of education taught is not linked to the dynamic environment. On the other hand, those who have minimum education rely more on their skills and training in modifying or developing new products. As a result, it is important to link what is taught with the market through the introduction of vocational training which will prepare labour with crafts and technical skills required for firm development. This is why most recent studies are focusing on human capital investment as a means for growth and innovation.

Moreover, experience was found to have a positive significant effect on innovation activities in SMEs which means that those who have high experience are more likely to innovate. Through experience firms can accumulate knowledge about domestic and international markets, learn more about the customer needs thus can modify their products, process or marketing accordingly. Firms in factor-driven economies can imitate the innovation produced from innovative-driven economies to target niche or new markets. Moreover, previous experience familiarise firms with better techniques, technology, skills and management which in return affect the innovation capabilities of SMEs. In addition to that, experience gained from previous work or

industry helps in building networks with suppliers and customers thus, managers can address new gaps and market opportunities.

Moreover, while the probit regression is an important tool in assessing the effect of firm and owner characteristics on innovation activities, a goodness-of-fit measurement will be performed (Table 5.24) to determine the goodness-of-fit of the probit regression model.

Table 5.24-Measurement of 'Percentage of Correct Proportions' and Goodness-of-fit for Innovation

Classified	D	~D	Total
+	71	46	117
-	70	219	289
Total	141	265	406

Classified + if predicted Pr(D)>.5 True D defined as Innovation =0		
Sensitivity	Pr (+|D)	50.35%
Specificity	Pr (-|~D)	82.64%
Positive predictive value	Pr (D|+)	60.68%
Negative predictive value	Pr(~D|-)	75.78%
False + rate for true ~D	Pr(+|~D)	50.35%
False - rate for true D	Pr(-|D)	82.64%
False + rate for classified +	Pr(~D|+)	60.68%
False - rate for classified -	Pr(D|-)	75.78%
Correctly classified		71.43%

Probit model for Innovation, goodness-of-fit test
Number of observations= 406
Number of covariate patterns= 194
Pearson chi2 (179)= 201.08
Prob > chi2 = 0.12

The overall rate of correct classification is estimated to be 71.43% with 82.6% of the normal weight group correctly classified (specificity) and only 50.3% of the low weight group correctly classified (sensitivity). Moreover, it was found that of the 141 firms that were innovating, the model was right about 71 and out of the 265 who were not innovating, the model correctly predicted that 219 would not and 46 would. On the other hand, the goodness-of-fit test indicates no evidence of poor fit therefore, the model indeed indicate a good fit.

5.4 Chapter Summary

In summary, this chapter provided descriptive analyses regarding the characteristics of Egyptian SMEs sample. Although only the study is focusing on exporting, innovation, and the relationship to growth, it was useful to present a deeper understanding of the Egyptian SMEs sample. As there is scarcity of studies on Egypt the understanding of external and internal factors affecting exporting and innovation activities will be helpful for policy-makers implication which will be discussed in Chapter 7. Different sections were provided to capture the characteristics of exporting/non-exporting firms, innovators/non-innovators, and growth of firms. However, future research should focus on the definition of innovation and high-and low-tech firms in Egyptian context to better understand their effect.

The data drawn from the sample of 406 Egyptian SMEs was descriptively analysed and provided an overview on the respondents profile and useful insight into the nature of the interrelationship between the variables.

Firstly, the firm characteristics were examined to identify variables associated with high growth. It was found that those firms with a partnership structure tend to grow better than the other forms. Furthermore, the size of firms is regarded as an important factor affecting the growth of firms which is extensively researched. The results found that middle-aged firms are more likely to grow compared to smaller ones. Moreover, firms operating in ‘high-tech’ industry were found to grow better than other industries.

Secondly, the owner characteristics was investigated where higher growth was associated with team management, middle-age owners, high level of education and high level of experience.

The chapter then examined the exporting and innovation profile of respondents to provide a better understanding of the sample. The total sample of exporting firms was 179 representing 44% of total population. It was found that partnership structure, middle-aged firm, medium-sized and high-tech firms, team management, males, older managers, high education and those who have less than years of experience are more likely to export.

On the other hand, innovation activities were found to be related with growth and exporting. The number of innovators in the sample was 141 while the majority engaged in product innovation. Moreover, a chi-square test was presented highlighting the important factors associated with

innovation. The results found that firm age, size, and education are significantly positively correlated with innovation.

In addition to that, a probit regression was conducted between exporting as a dependent variable and firm and owner characteristics as independent variables to better assess their importance on exporting. Furthermore, probit regression was used between innovation as a dependent variable and firm and owner characteristics as independent variables to assess their importance on the innovation activities in SMEs. A goodness-of-fit test was performed to determine the goodness-of-fit of the probit regression model.

The next chapter will present the regression and probit analyses for the research the hypotheses understudy. It will include all the dependent and independent variables used in the study followed by the discussion of the hypotheses.

Chapter 6: Results and Discussion

6.1 Introduction

The previous chapter described the general characteristics of the Egyptian SMEs innovation and exporting activities. It provided an overview regarding the relationship between dependent variable (growth) and independent variables (exporting and innovation). While the chapter found interesting relationships between the dependent, independent and control variables, this chapter will provide a deeper analyses. It investigates the effect of exporting and innovation on SMEs growth in Egypt based on the conceptual framework and hypotheses developed earlier. Moreover, it will provide a clear picture of the important factors needed for growth. The chapter contains a discussion of the results which will be placed within the context of current academic literature. It will empirically test the hypotheses developed in Chapter 3. Finally, the results and test of hypotheses will be summarised and reported while, their implications for SMEs context will be discussed in the next chapter. A multiple regression equation has been shaped to examine the effect of exporting and innovation on SMEs growth in Egypt, while examining the overall predictive power of the model. On the other hand, the probit model will be used to model the relationship between the dichotomous outcome (dependent) variable (exporters and non-exporters) and the predictor (innovators) variable to measure the effect of innovation on exporting activities. Meanwhile, the study forms an econometric foundation regarding the endogenous variables using the instrumental variables. This chapter will be divided into two sections each examining the hypotheses developed earlier. The first two hypotheses will examine the significant effect of exporting and innovation on firm growth. The empirical research will contain two main independent variables namely exporting and innovation activities in addition to nine independent variables used as control variables. The later variables were extensively studied and were found to affect the growth of firm thus, were included in the model.

6.2 Regression between Dependent Variables and Independent Variables

Multiple regression analysis is considered to be one of the most widely used analysis technique in social science (Field, 2009; Hair et al., 2005). It summarising the relationships between variables while making predictions of likely values of the dependent variable (Bryman and Carmer, 2009). Moreover, it measures the relationship between one dependent variable and several independent variables thus, considered to be a suitable technique to test hypotheses (Field, 2009). This is achieved by producing a model, in the form of a linear equation, which

identifies the best weighted combination of predictor variables to best explain the dependent variable (Hair et al., 2006). The regression equation is as follows:

$$y_1 = ß_0 + ß_1x_1 + ß_2x_2 + ß_3x_3 + ß_4x_4 + ε_i$$

In this equation, y is the predictor score on the dependent variables; the x's are the predictors or independent and control variables. While the betas are the weights or coefficient associated with the predictors. Each beta reflects the relative contribution of its variable, controlling for the effects of the other variables. As for the error term (epsilon) which is the residual or error for each case, it represents the deviation of the observed value of the response for this case from that expected by the model (Field, 2009).

The regression coefficient represents the amount of change in the dependent variable for a one-unit change in the independent variable (Hair et al., 2006). It is used to examine the direction of the independent variable and examine the overall predictive power of the variant

The aim of this chapter is to examine the influence of export and innovativeness activities on firm growth. Thus, a multiple analyses will be used to examine the presented model. The selection of independent variables was based on their theoretical relationship to the dependent variable (Growth). The independent variables were chosen to ensure that each conceptual group is represented in the model based on their theoretical relationship in the framework. However, before applying the multiple regression technique in this study there are number of assumptions that must be met to use the multiple analysis technique in developing a model (Hair et al., 2005). Those assumptions are found in Appendix 3.

6.2.1 Exporting and Growth in Egyptian SMEs

Previous studies had found a positive relationship between exporting and growth (Gashi et al., 2014; Littunen and Niittykangas, 2010) thus, it is important to investigate the relationship between exporting activities in SMEs and firm growth in Egypt as a new context. The results found a strong positive and significant relationship between exporting and firm growth. This highlights the importance of encouraging firms to export for economic development. However, a regression analysis is needed to examine the overall prediction power of this relationship. The importance of regression is to provide evidence for the validity of hypothesis 1 which test for the significant effect of exporting activities on firm growth.

6.2.2 Innovation and Growth in Egyptian SMEs

Previous studies on firm growth had argued that innovation is important for its survival (Barringer et al., 2005) and affect performance positively (Cefis and Marsili, 2006). However, Egypt is generally an emerging market and the market for patent is still in its infancy. In this study, innovation was found to have a strong positive association with growth at 1% level. The correlation result was slightly higher than exporting-growth correlation; however, both correlations were high and significant which reflects the importance of both variables for firm growth in Egypt. Meanwhile, a model for predicting the significance of these relations is important which will be examined in this chapter.

6.2.3 Innovation and Exporting in Egyptian SMEs

The relationship between exporting and innovation has received much attention due to their causal direction and impact on growth. While some studies found a significant effect of exporting on innovation, learning-by-exporting (Boermans and Roelfsema, 2015a; Yeaple, 2005; Melitz, 2003) others found a significant effect of innovation on exporting, self-selection (Love and Ganotakis, 2013; Harris and Li, 2011; Wagner, 2007).

In line with previous research, the results of chi-square test presented in chapter 5 found a significant relationship between exporting and innovation activities as exporters were more likely to innovate than non-exporters. On the other hand, as the dependent variable is dichotomous the use of probit model will be utilised. It is similar to the regression but the difference is that in the regression the dependent variable is continuous however, in the probit analyses the dependent variable is dichotomous. Moreover, an endogenous test will be performed taking into consideration the problem of endogeneity.

6.3 Results of the Empirical Testing

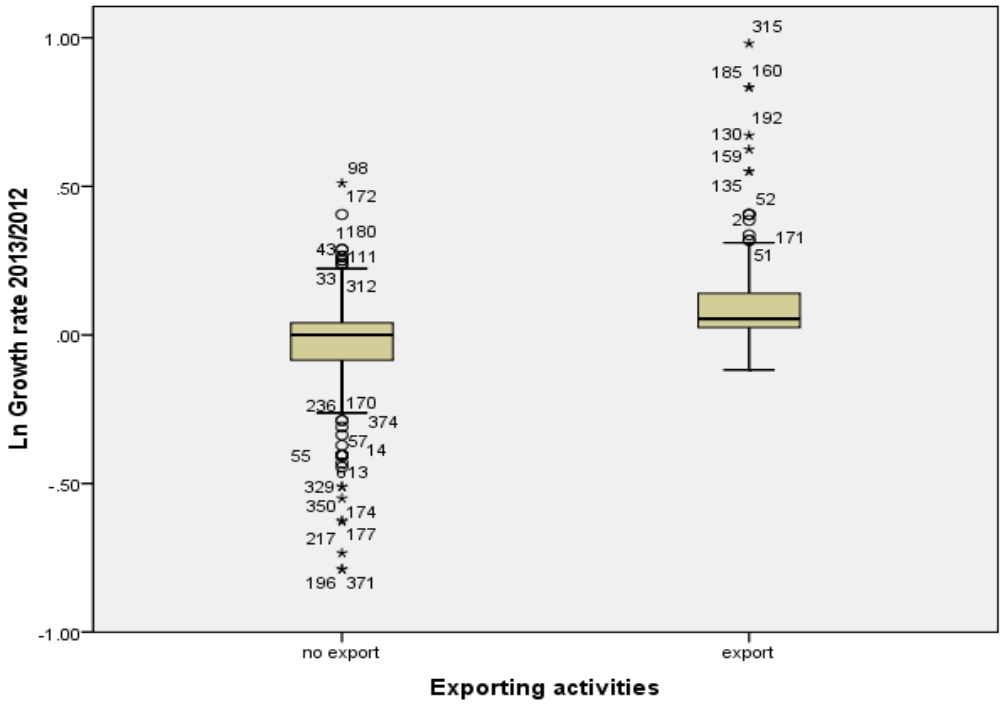
The main aim of this section is to test the hypotheses developed earlier in chapter 3 by searching for empirical evidence to support them. This approach is called hypothetic-deductive approach in the positivism paradigm. The next section is divided into two parts where each will discuss the hypotheses developed earlier. The first part will test the influence of the independent variables (exporting and innovation activities) on firm growth over the period (2012-2013). A number of variables were regressed with firm growth. The next section will present the regression analysis. The second part will examine the impact of innovation on firm exporting

activities using probit model while taking into consideration the endogeneity problem that might arise.

6.3.1 Linear Regression of the Effect of Exporting on SMEs Growth in Egypt

Literature had highlighted the importance of exporting activities on firm growth and performance (Love and Roper, 2015; Bravo-Ortega et al., 2014; Boermans and Roelfsema, 2015a; Roper and Love, 2002; Wagner, 2007) thus, the need to investigate the growth of firms in developing and emerging economies is required. Moreover, it is important to address the 'missing middle' phenomena in Egypt and investigate the factors fostering growth for boosting the economy. First, a boxplot in (Figure 6.1) is presented to give a useful understanding of the export and growth relationship and data distribution, followed by a regression analysis to investigate this relationship.

Figure 6.1 - Boxplot of Growth and Exporting Activities in Egyptian SMEs



The first hypothesis developed:

H1: Exporting activities significantly affect the growth of SMEs positively

In order to investigate the effect of exporting on SMEs growth in Egypt the following model is used:

$$y_1 = ß_0 + ß_1 \text{ firm characteristics} + ß_2 \text{owner characteristics} + ß_3 \text{Exporting} + \varepsilon_i$$

In this equation, y_1 is the predictor score on the dependent variables (LnGrowth). The vector firm characteristics include type of ownership, age, size, and industry; while owner characteristics include number of owners, gender, age, education, and experience; both untilised as control variables. Meanwhile exporting activities is the independent variable to be examined. Table 6.1 will present a model for examining the predictive power of exporting activities on SMEs growth in Egypt.

Table 6.1 - Linear Regression- Dependent Variable (LnGrowth) - Independent Variable (Exporting)

Variable / Model	**Model (1)**	**Model (2)**	**Model (3)**	**Model (4)**	**Model (5)**	**Model (6)**
Firm Characteristics						
Firm sole proprietorship Owned	-0.01			0.01	-0.001	0.003
Firm Partnership owned	0.05			0.04	0.04	0.04
Firm Age (Young)	0.03			0.03	0.03	0.04
Firm Age (Middle)	0.05*			0.05*	0.04	0.08**
Firm Size (small)	-0.06**			-0.05**	-0.02	-0.02
Firm Industry (low-tech)	0.08**			0.08**	0.05*	0.04
Firm Industry (high-tech)	0.01***			0.10**	0.07**	0.07**
Owner Characteristics						
Owner Number		0.05**		0.02	-0.01	-0.002
Owner Gender (male)		0.07**		0.04	0.02	0.01
Owner Age (young)		0.01		0.02	0.04	0.04
Owner Age (middle)		0.03		0.01	0.03	0.03
Owner Education (high)		0.07*		0.02	-0.02	-0.02
Owner Education (medium)		-0.02		-0.03	-0.05*	-0.05*
Owner experience		0.001		0.001	0.01	0.01
Exporting Activities			.14***		0.11***	0.17***
AgeM*Exp[2]						-0.09**
N	406	406	406	406	406	406
R-square	11.4%	7.2%	13.2%	11.2%	16%	17%

Note: Level of significance ***1%, **5%, *10%

[2] The number of observations for the new interaction variable (AgeM*Exp) is 126 observations.

In Table 6.1, attempts were made to include a range of variables to examine the relative importance of each set of characteristics to the explanatory power of the equation when introduced. This approach has been used in previous research on the growth of small firms (Barkham et al., 1996). The importance of each model can be compared a long way from model 1 to model 5. The table presents the multiple regression models with exporting activities as an independent variable while firm and owner characteristics as control variables. The dependent variable is lnGrowth. Six models are presented in order to capture the changes occurring when adding different sets of variables. In Model (1), the multiple regression model with the firm characteristics predictors produced R^2= .114, F (7,398) = 9.35, p<0.001, after treating for any heteroskedasticity. This means that the model was successful in predicting 11.4% of the variance in the dependent variable. Moreover, the F-test, which tests for the null hypotheses that there is no linear relationship between the variables, is highly significant. Therefore, it can be assumed that there is a linear relationship between the variables in the model and that the model is a good fit.

The results in Model (1) highlight the positive significant effect of middle-age firms on their growth. Firm age has been extensively researched producing mixed results. A positive significant relationship between firm age and growth was found due to accumulated resources (Heshmati, 2001) and learning effect (Jovanovic, 1982). As firms grow, they accumulate experience, resources, knowledge, skills and reputation which in return foster their ability to grow as younger firms are more likely to make mistakes compared to their older counterparts. On the other hand, a negative relationship between age and growth was found (Davidsson et al., 2002; Andersson, 2003: Cabral and Mata, 2003) suggesting that younger firms are more likely to grow than older firms. Younger firms try to grow quickly to achieve minimum efficient scale (Davidsson and Wiklund, 2000) thus perform better. Although previous studies found that older firms significantly affect growth, the manager motivational characteristics may play an important role in the growth firms (Baum et al., 2001). Thus, manager attributes is associated with firm age such as motivation, age, education and experience. Therefore, the results of this model suggest that middle-age firms are benefiting from accumulated resources compared to younger firms and flexibility of strategies compared to older counterparts.

Furthermore, firm size was found to have a negative significant effect on the growth of firms which is consistent with the conventional economic theory (Obeng et al., 2014; Biesebroeck, 2005; Frazer, 2005). The theory holds the position that firm size is positively correlated with growth by reason of economies of scales. They have cost advantage due to their size, operation or output which spread the fixed cost over the units therefore, decreasing its cost. Additionally,

larger firms have better access to financial resources, skills and management system thus, decreasing the perceived risk of growing. Therefore, size leads to the increase of firm capabilities and resources which in return affect the growth of firms. Moreover, larger firms have wider pool of human capital resources which enhance growth (Goedhurys and Sleuwaegen, 2015).

In addition to that, low- and high-tech firms were found to have a positive significant effect on the growth of firms. Although previous studies highlighted the importance of high-tech firms on the growth of firms (Littunen and Niittykangas, 2010; Chamanski and Waago, 2003) low-tech firms were also found to significantly affect growth positively. The nature of the firm creates a competitive environment and both must provide unique and differentiated products to compete and survive in the market. It was suggested that low-tech firms may be active innovators leading to better performance thus, target niche markets and address local needs (Raymond, 2010). Moreover, low-tech firms differ in structure, market orientation and external finance than high-tech (Terziovski, 2010) which helps them to grow.

In Model (2), the multiple regression model with owner characteristics predictors produced R^2=0.072, F(3, 398)= 5.510, p<0.01. This means that the owner characteristics explained 7.2% of the variability of firm growth. It could be found that Model (1) provided a better explanation of firm growth. The results of Model (2) found that the number of owners have a positive significant effect on the growth of firms which is consistent with previous studies (Bridge et al., 2003; Storey, 1994). Those firms operating with more than one owner can pool resources, experience and knowledge thus, help in fostering growth. They share management skills and can specialise in different areas compared to those operating individually who have to replace the whole skills such as marketing, finance and selling personnel (Barkham et al., 1996). Thus, operating with more than one owner provide the firm with competitive advantage.

On the other hand, the results found that males significantly affect the growth of firms in a positive way. Previous studies found that males are more likely to grow than females (Obeng et al., 2014; Abor and Biekpe, 2006). In the Egyptian culture females have dual responsibility, household and family, which affect their ability to take risk and start their business. Their lack of experience and commitment hinder their ability to grow. However, nowadays Egypt is focusing on how to empower women and the need to support micro-firms for better life.

Meanwhile, higher education has a positive significant effect on the growth of firms which is in line with previous studies (Queiro, 2016; Obeng et al., 2014; Davidsson et al., 2013; Goedhuys

and Sleuwaegen, 2010; Brown et al., 2005). Through education, managers gain more experience and knowledge thus, shaping their cognitive ability, coordination and skills. It develops their learning, analytical and managerial capabilities leading to evaluating better opportunities and strategies for growth. Through education, managers are introduced to different programmes that help in developing their business plans, expose to different strategies and disciplines that enhance growth. Moreover, it was found that education increase the firm life cycle by reporting new products using new technologies and ability to assimilate it faster (Queiro, 2016). Therefore, education and experience are considered to be an important human capital factor and a key driver of firm growth.

In Model (3), the coefficient of exporting was significant at 1% level with positive sign. R square is reported at .132 which implies that exporting activities only explained 13.2% of the unique variance of firm growth. This significant effect was supported in previous work (Boermans and Roelfsema, 2015a; Pham, 2015; D'Angelo, 2012; Bernard and Jensen, 2004). The importance of exporting on firm growth and productivity was extensively researched under the trade and growth literature. It is an important strategic tool where firms can increase productivity and market shares (Saixing et al., 2009) and an advocate means for the transfer of innovation. Through exporting SMEs can increase their sales and profits due to international customers' orders which are often large leading to higher profit margin. With an expanded market, SMEs are able to identify market opportunities and niche markets to expand their customer base which will bring long-term growth. Moreover, another advantage of tapping international market is enjoying economies of scale. By increasing their exporting activities to reach wider target markets, the cost of production per unit will decrease. Therefore, firms can benefit from lower unit cost and make products more competitive based on price advantages. Furthermore, engaging in international market enable SMEs to gain various experience, knowledge flows from international customer and supplier and information on new technologies which improve both the domestic and international market capabilities. Such experience and knowledge can be used to modify or develop new products and target overseas markets effectively which was supported by learning-by-exporting effect. The learning-by-exporting effect was found to positively affect the performance and growth of firms (Boermans and Roelfsema, 2015b; Meltiz, 2003; Yeaple, 2005; Salomon and Shaver, 2005a). As a result, firms are able to produce more innovative products and compete in international markets. In addition to that, those who are exporting are able to reduce the risk that the firm may be exposed to because of the recession and the fluctuation in business cycles resulted from the revolution during the researched period. Therefore, another advantage from exporting is diversifying risks either due to market changes or country recession.

Model (4) presents the effect of firm and owner characteristics on firm growth. The results highlight the unique effect of firm characteristic on growth. The middle-aged, small size, low-and high-tech firms remained significant while number of owners, gender and high education were suppressed and became non-significant. As the firm grows, it gains more experience, accumulate knowledge, network with suppliers and customers, reputation that replace the effect of the increase in the number of owners and education. In addition to that, the nature of the industry the firm operates in is important in firm growth and how well it can adapt to the market needs. On the other hand, previous studies highlighted the importance of firm size in growth of firms. The size effect restricts the firm resources such as financial, human and physical, which hinder their growth.

In Model (5), exporting activities was added to the model which had a positive significant effect on firm growth at $p<.001$. The model produced $R^2= .16$, $F (15,390) = 6.06$, $p<.001$; thus was successful in predicting 16% of the variability in the dependent variable. The full model contains the control variables and exporting activities which is complex in its interpretation. Compared to previous models, the exporting had increased the predicting power by 5% which concludes the importance of exporting in firm growth. While, previous studies focused only on the firm and owner characteristics, this model added the exporting activities to it which led to its improvement. However, when exporting was introduced to the model it suppressed the significance of middle-age firms and size while education (medium) became significant. However, the effect of industries remained significant which highlights the high significance even in a single regression of industries on firm growth. Firms that understand the international market needs are able to provide products that help them to grow. However, in order to understand the changes that happened, an interaction variables are examined which will be discussed in model 6.

In Model 6, interaction variables are reported as the effect of one explanatory variable depends on the value of different explanatory variables. An interaction between age (medium) and exporting, size (small) and exporting, and education (medium) and exporting were investigated where only age (medium) and exporting showed a significant effect. Therefore, this new interaction variable AgeM*Exp[3] was regressed in the model to provide a better understanding of the interaction between variables. The results of the new variable (AgeM*Exp) found a negative significant effect (beta= -0.09, $p<0.05$) while the R^2 slightly improved by 1% and exporting beta increased from 0.11 to 0.17, $p<0.001$. Evidence from theories such as the Uppsala model,

[3] The new interaction variable AgeM*Exp is generated from multiplying age (medium) by exporting. A new variable was created and regressed in model 6. .

IPLC and network model (Johanson and Vahlne, 1977; 1990) support this result, as firms move along the curve they gain more experience that facilitates their growth.

The Uppsala model steams from the firm's growth theory (Penrose, 1959) and the behavioural theory of firm (Cyert and March, 1963) which acts as an interplay between development of knowledge about foreign markets and increase commitment of resource to them (Johanson and Vahlne, 1990). The dynamic framework of the model highlights the importance of firm age and shows how firms gradually internationalise and select their foreign market when engage in global activity. Moreover, it describes internationalisation of firms as a behavioural process by which firms that engage in domestic market move through sequential (step-by-step) stages till they reach foreign market as a result of knowledge development and learning which ate gained through age (Johanson and Vahlne, 1977, 1990; Johanson and Wiedersheim-Paul, 1975; Shi, 2003). The firm starts domestically and as a result of a saturated domestic market, it enters to the closest market similar in culture and language (Rodriguez, 2007) to reduce psychic distance using the simplest entry mode such as exporting via independent representatives (Johanson and Vahlne, 1977). When the firm starts to gradually engage in internationalisation activities, the outcome of one stage becomes the input for the next one (Andersen, 1993) and knowledge is gained through experience and learning process along the model (Johanson and Vahlne, 2003).

On the other hand, the management decision making process is highly affected by the lack of knowledge regarding foreign involvement and resource commitment. As firm grows older, the knowledge accumulated will increase their likelihood to engage in foreign market which will positively impact firm growth (Forsgen, 2002). Once knowledge is accumulated, the firm starts to switch to more direct export modes such as overseas distributors (Kamakura and Ramon-Jeronimo, 2012) thus foster growth.

Moreover, firm age enables the accumulation of networks access to resources through developing both formal and informal ties between the firm and other actors which will replace internal resources and capabilities of larger firms and enable SMEs to overcome lack of resources and serve foreign markets (Coviello and Munro, 1995, cited in Zain and Ng, 2006; Oviatt and McDougall, 1995; Schmidt-Buchholz, 2001; Johanson, 2004). They can create channels of information flows and knowledge to overcome the problems of limited resources and experience (Chiao et al., 2008). By developing such ties, it will reduce risk and transaction costs meanwhile improving firm's knowledge, resources and innovation capabilities (Coviello and Munro, 1995, cited in Zain and Ng, 2006; Chetty and Holm, 2000; Chetty and Patterson, 2002; Kristiansen, 2002). Furthermore, as firm age increases, firms learn from counterparts in the network which affects their growth positively (Elango and Pattnaik, 2007).

Therefore, the experience, knowledge and networks that firm develop affect their exporting activities positively and age become an important factor for their growth.

On the other hand, the results in model 6 found a negative significant effect of education (medium) and firm growth (beta= -0.05, $p<0.1$). In studying the owner education level, data collection focused on different levels of education from no qualification till postgraduate studies. Medium and high education seems to present a high percentage of the data 28.6% and 55.2% respectively. Nevertheless, high education had a positive relationship with exporting and was more likely to export which was consistent with previous work (Ganotakis and Love, 2012). However, one reason for the negative significant effect of education (medium) on firm growth is associated with lower cost. Such firms (minimum educated) might be performing better due to low wages thus, can produce lower priced goods which are competitive in international markets (Schott, 2004) as exporting cost is higher in firms with educated labour due to the increase cost of specialised labour. In addition to that, skills are gained from on-the-job training which is equally important as formal education (Magoutas et al., 2012). Training on the job strengthens growth endogenously by increasing labour quality and productivity which in return leads to self-selection effect (Magoutas et al., 2012). The self-selection of the most productive firms into being exporters depends on skill intensity in the firm (Schott, 2004). For example, firms in the furniture industry in Damietta governorate in Egypt are characterised by very highly skilled labour however their level of education is low. This highlights the importance of human capital investment as a source of firm growth. Future studies will be helpful to investigate the effect of trained and skilled labour on firm growth. Moreover, owners having low education level might have high level of skilled workers which are operating mainly in low-tech firms.

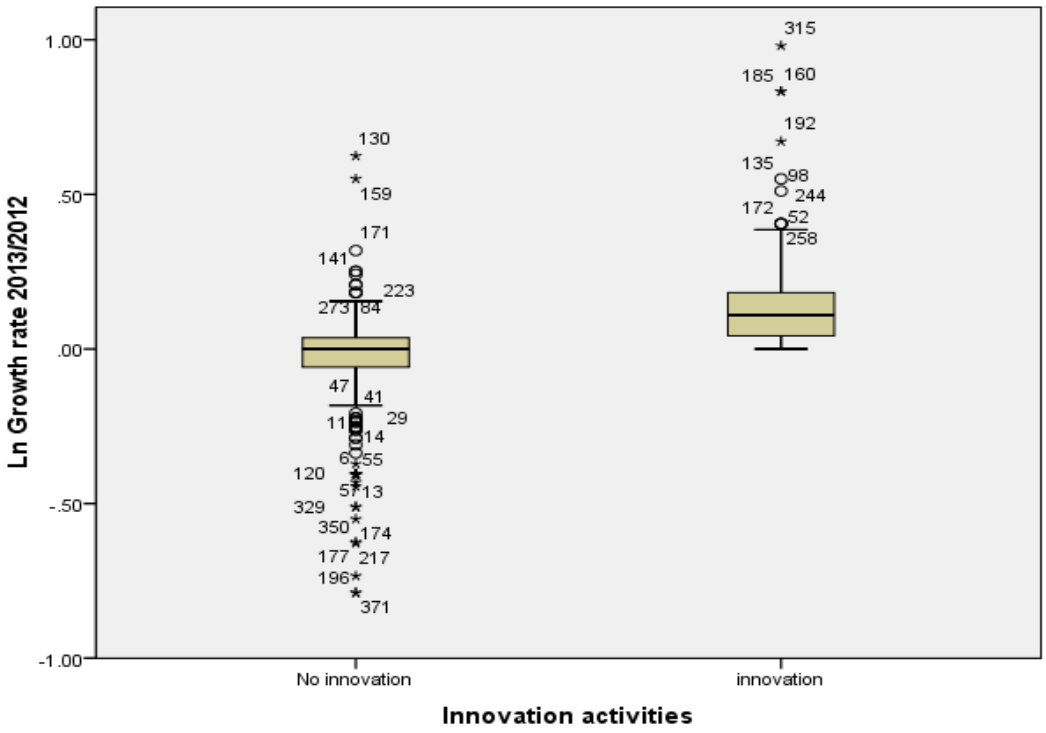
In light with the results, it is suggested to have vocational training centres to improve the performance of owners and workers. Policy-makers should provide programmes to enhance owners' skills and training capabilities as most of the education system is related to theories with no case studies and practical work on real life. Therefore, the education variable (medium) which represents those who have diploma is negatively significant to growth.

In summary, this section introduced 6 models to investigate the importance of firm and owners characteristics and exporting activities on firm growth. An interaction variable was introduced in the last model to give a better understanding of interaction variables. The results found that exporting significantly affect the growth of firms in a positive way, it represent alone around 13% of explained variables. From the results above, the first research hypothesis is supported.

6.3.2 Linear Regression of the Effect of Innovation on SMEs Growth in Egypt

The focus of this section is on the detailed discussion of innovation activities that have been shown to have significant associations with growth rate (employment rate) in small firms. The overall aim is to interpret the results of this study and to compare them with the wider literature on small firm growth. Figure 6.2 represents the boxplot for the innovation-growth relationship.

Figure 6.2 Boxplot of Growth and Exporting Activities in Egyptian SMEs



The second proposed hypothesis for this study was the following:

H2: Innovation activities significantly affect the growth of SMEs positively

Firm growth was found to be associated significantly with firm innovation activities. The 141 innovator respondents accounted for 34.7% of the total population. A regression analysis was performed to examine the hypothesis. Table 6.2 presents the results of the regression analysis.

Table 6 .2 - Linear Regression - Dependent Variable (LnGrowth) - Independent (Innovation)

Variable / Model	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
Firm Characteristics						
Firm sole proprietorship Owned	-0.01		0.01		-0.001	-0.01
Firm Partnership owned	0.05		0.04		0.02	0.03
Firm Age (Young)	0.03		0.03		0.05*	0.007
Firm Age (Middle)	0.05*		0.05*		0.06**	0.06**
Firm Size (small)	-0.06**		-0.05**		-0.05**	-0.05**
Firm Industry (low-tech)	0.08**		0.08**		0.05*	0.04*
Firm Industry (high-tech)	0.01***		0.10**		0.04	0.04
Owner Characteristics						
Owner Number		0.05**	0.02		0.01	-0.002
Owner Gender (male)		0.07**	0.04		0.03	0.03
Owner Age (young)		0.01	0.02		0.01	0.03
Owner Age (middle)		0.03	0.01		0.03	0.03
Owner Education (high)		0.07*	0.02		-0.001	-0.006
Owner Education (medium)		-0.02	-0.03		-0.01	-0.02
Owner experience		0.001	0.001		-0.01	-0.02
Innovation Activities				0.18**	0.16***	0.12***
AgeY*Inn[4]						0.16***
N	406	406	406	406	406	406
R-square	11.4%	7.2%	11.2%	20.4%	24%	26.7%

Note: Level of significance ***1%, **5%, *10%

Table 6.2 presents the multiple regression analyses to investigate the effect of innovation (independent variable understudy), firm and owner characteristics (set of control variables) on firm growth (dependent variable) to test for the second hypothesis. Six models are presented to capture the changes occurring when adding different set of variables to the models. The interpretation for models 1, 2, 3 were discussed in previous section however, this table will investigate innovation effect in the model.

In Model (4), the coefficient of innovation was significant at 5% level with a positive sign. R^2=0.204, F(1, 404)= 105.02, p<0.05. This implies that the model was successful in predicting 20.4% of the variability in firm growth. The results are consistent with previous studies that found

[4] The number of observations for the new interaction variable AgeY*Inn is 28 observations

a significant effect of innovation on firm growth (Ganotakis, 2012; Cozza et al., 2012; Andersson and Lööf, 2012; Corsino, 2008; Roper, 1997). More innovative firms do indeed grow faster than non-innovative firms. Innovation provides competitive advantage to the firm by introducing new products, processes and marketing innovations that enable better respond to the external environment. Through innovation firms will be able to compete domestically or internationally by providing a superior product. Previous studies found that firm growth depend on its ability to exploit technological innovation (Cohen, 2010) and that innovation is a vital channel fostering firm growth (Madson et al., 2009). Moreover, strong relationship between innovation and firm productivity was found (Lööf and Heshmati, 2006). Thus, it is a generator of competitiveness and exerts a positive effect on profitability, performance and growth (Freel, 2000).

Model (5), presents the result of adding innovation (independent variable understudy), firm and owner characteristics (control variables) to investigate their effect on the firm growth (dependent variable) to test for the second hypothesis. It could be found that R^2= 0.24, F(15, 390)= 9.48, p<0.001 thus, the model was successful in predicting 24% of the variability in firm growth. Comparing to model 3, model 5 has improved from 11.2% to 24% which highlights the importance of innovation and the role it plays in the growth of firms. Moreover, the results found that firm characteristics are important in firm growth and that middle-aged, size, low-tech firms remained significant while high-tech industry was suppressed and young firms became significant. In order to better understand the changes that occurred, interaction variables were created in model 6 to capture the changes.

In Model 6, interaction variables are reported as the effect of one explanatory variable depends on the value of different explanatory variables. Thus, an interaction term between firm age (young), high-tech firms and innovation was created to understand the change in significance from model 3 to model 5 however, only young firm and innovation was found to be significant. The new variable AgeY*Inn[5] was added to the model and the results found a significant effect (beta = 0.16, p<0.001) which is higher than innovation. The results reported an R^2= 0.267, F (16, 389)= 10.2, p<0.001 thus, it successfully predicted 26.7% of the variability in firm growth. Compared to model 5, it has improved from 24% to 26.7% and the innovation coefficient has weakened from (beta=0.16, p<0.001) in model 5 to (beta = 0.12, p<0.001) in model 6 but remained significant. The relationship between young firms and innovation was highlighted in previous work as young firms were found to have more innovative ideas and dynamic management enabling them to grow more rapidly than older firms (Davidsson and Wiklund,

[5] The new interaction variable AgeY*Inn is generated from multiplying age (young) by innovation.

2000). They start with no routine and capabilities thus, are challenged to increase their innovation capabilities (Helfat and Peteraf, 2003). Moreover, innovation in young firms was found to be associated with growth as they are more likely to introduce new products to the market (Coad et al., 2016).

On the other hand, although the interaction variable for high-tech and innovation was not significant, the results from the chi-square test in Table 5.21 found a positive relationship between innovation and high-tech firms and they were more likely to innovate which is supported by previous work (Wiklund et al., 2000; Samaniego, 2006).

In conclusion, six models were developed to test for the second hypothesis that innovation activities significantly affect the growth of SMEs positively. The hypothesis was supported highlighting the important role innovation plays in the growth of firms. In model (4), innovation alone explained 20.4% of the unique variance in affecting firm growth (ß=.18), $p<0.001$) which is considered to be high and consistent with previous studies. Therefore, there is a need to foster the role of innovation in the Egyptian context and try to link firms with universities to benefit from the spill-over or clustering advantages. It is another factor in contributing to the growth of firms as innovation and technological changes in recent years had enabled practitioners in the industry to improve their operation capabilities in order to improve the product level in competitive markets.

The previous sections examined the significant effect of each independent variable alone on the growth of SMEs in Egypt. However, the need to develop a model to integrate both variables is important. The two main theoretical variables were examined using the linear regression which uses LnGrowth rate as the dependent variables for a simple period. Table 6.3 reports the linear regression controlling for firm and owner characteristics. It presents six different models each represent a group of variables. In the first model, the firm characteristics were regressed with firm growth; the second model includes the owner characteristics; the third model compiles both firm and owner characteristics; the fourth model integrates exporting activities to the control variables; the fifth model integrates the innovation activities to the set of control variables; and finally the sixth model which integrate exporting and innovation to the set of variables.

Table 6.3 - Linear Regression - Dependent Variable (LnGrowth Rate) - All Independent Variables

Variable / Model	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
Firm Characteristics						
Firm sole proprietorship Owned	-0.01		0.01	-0.001	-0.001	-0.01
Firm Partnership owned	0.05		0.04	0.04	0.02	0.02
Firm Age (Young)	0.03		0.03	0.03	0.05*	0.05*
Firm Age (Middle)	0.05*		0.05*	0.04	0.06**	0.05**
Firm Size (small)	-0.06**		-0.05**	-0.02	-0.05**	-0.01
Firm Industry (low-tech)	0.08**		0.08**	0.05*	0.05*	0.02
Firm Industry (high-tech)	0.01***		0.01**	0.07**	0.04	0.01
Owner Characteristics						
Owner Number		0.05**	0.02	-0.01	0.01	-0.02
Owner Gender (male)		0.07**	0.04	0.02	0.03	0.001
Owner Age (young)		0.01	0.02	0.04	0.01	0.03**
Owner Age (middle)		0.03	0.01	0.03	0.03	0.05
Owner Education (high)		0.07*	0.02	-0.02	-0.001	-0.04
Owner Education (medium)		-0.02	-0.03	-0.05*	-0.01	-0.03
Owner experience		0.001	0.001	0.01	-0.01	-0.01
Exporting Activities				0.11***		0.11***
Innovation Activities					0.016***	0.16***
N	406	406	406	406	406	406
R-square	11.40%	7.2%	11.2%	16%	24%	28%

Level of significance: ***1%, **5%, *10%

Table 6.3 shows the results of the multiple regression models with all predictors, which uses lnGrowth as the dependent variable. Model 6 integrates both independent variables understudy to present the proposed model for this thesis. On these findings, R square is reported at 28% at the 1% significance level, which implies that model under study explained 28% of the unique variance in affecting firm growth. This percentage is considered to be appropriate and a good indictor in social science research. The results reflect the importance of firm age (middle) which was significant in single and multiple regressions. Nevertheless, owner age (young) and firm age (young) became significant. As for the research independent variables namely exporting and innovation, both were found to be positively significant at 1% significance level.

In summary, this section conducted a multiple regression analysis to examine the significant effect of exporting and innovation activities on firm growth. It first examined each independent variable alone and then discussion on the results was followed. The next step was integrating

the control variables and the independent variables (exporting and innovation) to build the research model. Six models were developed, each was explained and discussed. The results of this section had led to the support of the first two hypotheses presented in the study. It has been found that exporting and innovation play an important role in the growth of firms which is in line with previous work.

The next section will examine the third hypothesis which is the effect of innovation on exporting in the Egyptian SMEs. This relation will use a different approach other than the linear regression since the assumptions for linear regression were not met. The other tool for analysing this hypothesis is the probit analyses. On the other hand, the model will address the problem of endogeneity between innovation and exporting.

6.3.3 Probit Regression Testing Innovation - Exporting Effect in Egyptian SMEs

In this study a multivariate logistic regression will be used between exporting firms (dependent variable) which is dichotomous (exporting or non-exporting) and the predictor variable which is innovation activities in the firm. This technique identifies the key variables that are significant in differentiating between exporting and non-exporting firms. To test for the hypothesis, a probit regression with the following regression equation will be applied:

$$Export_i = ß_0 + ß_1 \text{ firm characteristics} + ß_2 \text{ owner characteristics} + ß_3 Innovation_i + e_i$$

Where Exporting is measured as a binary variable whether the firm is exporting or not, $Innovation_i$, is the measure for innovation activities, firm characteristics include (structure, age, size and industry) and owner characteristics include (number of owners, age, gender, experience and education) that were found to affect exporting activities, $Innovation_i$ namely innovation, the independent variable understudy.

$ß_0$: the constant and,

$ß_1$, $ß_2$, $ß_3$, are the coefficient respectively related to the independent variables.

$$\text{Export I} \begin{cases} = 1 & \text{if } Export_i > 0 \\ = 0 & \text{if } Export_i \leq 0 \end{cases}$$

6.3.4 Econometric Model for Innovation and Export – Instrumental Variable

Innovation literature had pointed out that the key factor contributing to the successful internationalisation is innovation (Monreal-Perez, 2012; Ganotakis and Love, 2011; Lööf et al., 2015). Given the growth of firms in world trade, further need to integrate innovation as an important factor contributing to exporting activities in small firms is important. One of the problems that face studies on small firms, when collecting cross-sectional data, is that they fail to include lagged variables directly (Higon and Driffield, 2011). Therefore, in order to take into account the potential endogeneity between exporting and innovation, instrumental variable (IV) approach is utilised as highlighted in previous research (Higon and Driffield, 2011; Nguyen et al., 2008; Becker and Egger, 2007; Lachenmaier and Wößmann, 2006). The main idea of instrumental variable is to find variables that are highly correlated with innovation but not with the error term.

$$Innovation_i = \gamma_0 + \gamma_1 X_i + \gamma_2 Z_i + u_i$$

Where z is the vector of instrument, which is strongly correlated with innovation but uncorrelated with the error term in exporting equation, X_i is a set of exogenous variables.

Literature had identified several instrumental variables such as: awareness of lacked skilled workers, improve quality of products, improve productivity, training activities, higher education level, introducing new products, reinvestment of profits, government support and R&D (Higon and Driffield, 2011; Nguyen et al., 2008; Lachenmaier and Wößmann, 2006; Ganotakis and Love, 2010). However, before using those instruments, a correlation matrix was conducted to ensure that the variables are highly correlated with innovation and not exporting. The result of the correlation matrix revealed that only 'government support' was correlated with innovation and not exporting. Therefore, 'government support' instrument was proposed for running the endogeneity test. It is confirmed that this variable fulfils both the inclusion restriction which is that the instrument is correlated with the endogenous variable and exclusion restriction which is that the instrument cannot be correlated with the error term in the model.

The results are presented below in Table 6.4. As it could be found $p>.05$ thus, the null hypothesis that the variables are exogenous is accepted which means there is no endogeneity between exporting and innovation activities.

Table 6.4 - Endogeneity Test

Tests of Endogeneity **H0: Variables are exogenous**	
Durbin (Score) chi2 (1)	**= .578 (p= 0.45)**
Wu-Hausman F (1, 389)	**= .55 (p=0.46)**

Since there is no endogeneity between exporting and innovation a probit model will be performed to examine the effect of innovation on the exporting activities of firms.

Table 6.5 - The Impact of Innovation Activities on Export Activities in Egyptian SMEs

Variables	**Coef.**	**Std. Err.**	**P>z**
Independent Variable			
Innovation	0.001	0.19	0.996
Control Variables			
Firm (Sole Prop. owned)	0.06	0.53	0.91
Firm (Partnership owned)	0.10	0.32	0.76
Firm Age (Young)	0.25	0.30	0.42
Firm Age (Middle)	0.43	0.27	0.11
Firm Size (Small)	-1.6***	0.28	0.000
Firm Industry (low-tech)	1.7***	0.34	0.000
Firm Industry (high-tech)	1.5***	0.35	0.000
Owner Number	0.77	0.51	0.132
Owner Gender (Male)	1.23***	0.29	0.000
Owner Age (Young)	-0.92**	0.43	0.033
Owner Age (Middle)	-0.81***	0.22	0.000
Owner Education (High)	1.6***	0.32	0.000
Owner Education (Medium)	0.86***	0.22	0.009
Owner Experience (High)	-0.21	0.17	0.22
_cons	-3.6	0.74	0.000
Number of obs	406		
LR Chi-square	256.04		
Pro> Chi-square	0.000		
Pseudo R2	0.46		
Log likelihood	-150.55		

Note: Estimated by probit model. Level of significance ***1%, **5%, *10%

Table 6.5 presents the results of the probit regression with innovation as the main independent variable understudy. Discussion on the control variables were interpreted earlier in Chapter 5 thus, this section will mainly focus on innovation activities effect on exporting activities in SMEs to examine the third hypothesis. The results from Table 6.5 found that there is no significant effect of innovation on firm exporting activities (beta=0.001, p=1) and R^2 =46%. Although, there is an extensive research emphasising the importance of innovation on exporting (Audrestsch et al., 2014; Ganotakis and Love, 2012; Golovko and Valentini, 2011; Cassiman and Golovko, 2007; Roper and Love, 2002; Higon and Driffield, 2011), this does not seem to be the case in Egyptian SMEs. Love and Ganotakis (2013) found that innovation affects exporting activities due to the self-selection mechanism. According to the self-selection mechanism, more productive firms are more likely to export due to their ability to overcome high and sunk cost associated with exporting activities (Love and Ganotakis, 2013). Moreover, being innovative increases the competitiveness of the firm which is a prerequisite for engaging in international market. However, not all types of innovations will exert the same effect (Hall et al., 2008). While product innovation is tangible and associated with changes in market demand, process innovation is intangible but affects the productivity and efficiency of the firm (López-Bazo and Motellón, 2013). As a result, product innovation has a greater impact on exporting compared to process innovation. That is why, many studies focus on studying the effect of product innovation on exporting (Roper and Love, 2002).

While innovation is important as a source of competitiveness in international market, it seems that Egyptian SMEs face difficulties in their innovation competitiveness level. Due to the fierce competition faced in international markets, Egyptian SMEs innovativeness does not seem to be competitive to foster their exporting activities. It might be the nature of the innovation to the firm. Firms might engage in innovation activities however, it is only new to the firm or local market which has a minimum effect on the international market arena. The results of the 141 innovative firms found that the majority was only modifying or introducing new innovation to the firm thus, it might not be new to the market. In order to achieve competitiveness, SMEs need to develop a unique innovation to provide a unique product rather than imitation. Although some of the Egyptian SMEs innovate, the quality of goods produced is not competitive with other products offered in international market.

Furthermore, the non-significant impact of innovation on exporting might have several causes: reaching international customers or developing new products requires SMEs to diversify their position by either understanding technological innovation or market development; it could be also the manager cognitive perspective regarding firm strategy; or lack of knowledge about

international market which is considered to be a platform for reaching new customers and develop new markets.

Moreover, the level of innovative products offered by developed countries might be different than those of emerging economies highlighting the difference between factor-driven economies and innovation-driven economies.

As a result, there is a need to develop a more understanding on what does innovation means in the Egyptian context and develop future comparative studies with western countries. There might be differences in the manager ways of perceiving innovation in firms, high-tech versus low-tech, thus, by using mixed methods, a deeper understanding will be important for future research. The use of interviews with managers and focus group to develop a definition for innovation in SMEs followed by quantitative approach will be more robust. In addition to that, more details about the percentage of sales from the introduced product, process and marketing innovation might give a better overview on the importance of this innovation in international market. Furthermore, the amount of R&D invested, the number of countries they export to, the sales return from selling the products overseas will be very helpful. Therefore, it is recommended for future research to address this gap.

In conclusion, exporting and innovation activities were found to significantly affect firm growth positively which is consistent with previous studies. However, it was surprising to find that innovation did not affect exporting activities which highlights the difference between factor-driven economies and innovation-driven economies. Table 6.6 summarises the hypotheses understudy, while the next chapter will address the conclusion and recommendations.

Table 6.6 - Summary of Hypotheses Testing

N	***Hypothesis***	***Findings***
H1	Exporting Activities Significantly Affect the Growth of Egyptian SMEs Positively	Supported
H2	Innovation Activities Significantly Affect the Growth of Egyptian SMEs Positively	Supported
H3	Innovation Activities Significantly Affect Exporting Activities of the Egyptian SMEs	Not Supported

6.4 Implications from Export and Innovation Probit Models

The results from the export and innovation probit models that were presented in chapter 5 provide a useful implication for policy-makers and practitioners. Firstly, the results from the export probit model found that firm size (small) significantly affect exporting in a negative way. Firm size is found to be an important factor in determining firm performance (Kalantaridis and Vassilev, 2011; Saixing et al., 2009) which helps firms to export (Andersson et al., 2004). They are able to pool more resources and have wider pool of human capital (Kundu and Katz, 2003) enabling them to better engage in exporting activities. Thus, it is important for policy-makers to provide young firms with necessary information regarding international markets and link them with networks to foster their exporting capabilities. The main barrier affecting the growth and exporting of SMEs is lack of information which is considered to be a vital factor for firms to develop, exploit and target overseas markets. Thus, one of the main recommendations for policy-makers is to develop a consultancy and marketing units in all governorates where all the necessary information regarding international markets is provided to SMEs.

Moreover, industry type (low- and high-tech) firms were found to significantly affect the exporting activities of firms. Both types must provide a unique product in order to compete in international markets. However, there is a need to develop a deeper definition about different types of industries in the Egyptian context. More work is needed to identify the competitiveness within different types. While high-tech firms might provide a modified or unique product, low-tech firms might provide a new process or target a niche market. Therefore, it will be important to investigate the different strategies industries adopt in overseas market.

While males were found to significantly affect the export of firms due to their commitment and risk-taking characteristics, more studies are needed to investigate the barriers affecting females' engagement in international market. In the Egyptian culture, females are less likely to assume risk and start their business as they are at a disadvantage due to their dual responsibility. However, the government should foster the role of females and provide programmes to support their entrepreneurial activities.

In addition to that, manager age (young, middle) was found to significantly affect exporting activities in a negative way. It is considered as an important factor influencing the exporting activities of firms as it takes time to acquire the necessary skills and develop networks. Older managers are suggested to have a greater ability to solve problems compared to younger managers. Thus, it would be helpful if policy-makers can provide a consultancy and advice unit

for young managers and follow up with them to overcome the lack of experience and knowledge about the international market. Moreover, there is a need to provide supportive programmes to foster their growth. It is helpful if policy-makers can develop successful programmes such as Goldman Sachs in UK to benefit SMEs.

Education, one of the factors that have been recently tackled, is considered as an important factor affecting SMEs exporting. Both education types (higher and medium) were found to significantly affect the exporting of SMEs. It shapes the cognitive abilities and skills of managers enabling them to better evaluate market opportunities, strategies and acquire more knowledge about international market. Thus, it is important to introduce entrepreneurial programmes from early educational stages as awareness in the Egyptian culture. Moreover, the need to improve the quality of vocational training will foster the ability of firms to improve their products and engage in international markets.

On other hand, the results from the innovation probit model highlight the importance of industry types (high- and low-tech), education and experience. Those firms located in high and low-tech were found to significantly affect innovation in Egyptian SMEs. However, future research is needed to understand what does innovation means in the Egyptian context. While the study adopted the Olso manual definition for innovation, this might be misinterpreted in the Egyptian context. Therefore, by using qualitative methods and focus groups it would be helpful to formulate a unified definition for innovation. Moreover, the difference between low-and high-tech firms need more investigation. There must be a benchmark and criteria to differentiate between different types thus, will provide a better understanding in the Egyptian context. Meanwhile, policy-makers should link universities with industry to benefit from the spill-over thus, fostering the role of innovation.

In addition to that, education was found to significantly affect innovation in SMEs. It helps in assimilating new technologies to the firm and promotes learning process. Therefore, policy-makers should develop programmes to support SMEs development through workshops, seminars and direct support. Successful programmes such as Goldman Sachs 10,000 Small Business programme and LEAD (Leading Enterprise and Development) that are offered in UK will be helpful.

Furthermore, experience was found to significantly affect innovation due to accumulated knowledge and skills. As mentioned earlier there must be centres to provide consultancy and advice for SMEs.

In conclusion, this study aimed at investigating the effect of exporting and innovation activities, as strategic variables, on firm growth. The significant positive effect which was found highlights the importance of promoting exporting and innovation within the Egyptian SMEs. Thus, factors affecting innovation and exporting were discussed providing recommendation for policy-makers.

Chapter 7: Conclusion and Recommendations

7.1 Introduction

This chapter summarises the thesis by discussing the research results on the positive significant effect of: (1) exporting activities on SMEs growth in Egypt, (2) innovation activities on SMEs growth in Egypt, (3) innovation activities on SMEs exporting activities in Egypt. Moreover, the theoretical implications and the overall contribution of the study will be presented. Recommendations are developed for policy makers, practitioners, and academics for small and medium-sized enterprises in Egypt. Limitations and directions for future research will be presented.

7.2 Summary of the Research

The ever-increasing global and domestic competition along with the importance of SMEs as an engine of growth and a source of job creation and innovation motivated this study to investigate the determinants of growth in SMEs with respect to exporting and innovation activities in Egypt. Recent studies highlighted the importance of the relationship between growth, innovation, and exporting (Love and Roper, 2015; Boermans and Roelfsema, 2015a) however, there is a lack of studies on developing countries. Upon close review, most of the previous studies tend to focus on developed countries disregarding the importance of growth for developing economies and traditional industries (Veglio and Zucchella, 2015; Zucchella and Siano, 2014; Bell et al., 2003). Thus, the main importance of this study is to bridge the gap by investigating the effect of exporting and innovation on SMEs growth while examining the effect of innovation on exporting activities in Egypt. It is important to study developing countries as what might be applicable in developed countries might not be applicable in developing and emerging economies. In addition to that, those developing countries have a lower standard of living and underdeveloped industrial base; low transfer of technology; thus, the need to develop a deeper understanding of the factors affecting their growth is vital which will pave the way for comparative studies. In Egypt, there is a lack of studies regarding the high growth firms and much is needed for improving SMEs performance and productivity. Compared to UK, Europe, and the USA, Egypt is way behind on the entrepreneurial level which makes it very important to focus on SMEs nowadays in Egypt. With the inauguration of the Suez Canal project and the country's unique location, the government aims to develop a technological hub in this area, which reflects the importance of SMEs. Thus, it becomes crucial to examine what factors contribute to firm growth.

Furthermore, the importance of the contribution of SMEs to the economy and particularly growth is very obvious from the literature review. While, growth is clearly an important factor, exporting and innovation are regarded as the most important forms of such growth strategies. Hence, the need for SMEs to overcome export barriers and find ways to stimulate innovation is a key factor in their existence and growth. Moreover, exporting plays an important role in improving trade balance while regarded as a key factor boosting economies to recover from a recession and stimulate growth. Thus, the need to examine the significant effect of innovation and exporting on firm growth in Egypt after the recession is vital. In addition to that, this thesis will examine the effect of innovation on SMEs exporting activity after taking into consideration the problem of endogeneity. As Egypt is suffering from 'missing middle' and recession, the results will contribute significantly to policy makers, government institutions, practitioners, and managers. The need to study the determinants of Egyptian SMEs growth becomes important to move from small to larger firms as medium firms are found to provide better trained people, offer higher wages, better quality of goods and services, higher productivity, high investment in R&D, more innovative and able to engage in export activities (Altenburg and Eckhardt, 2006) which are essential for boosting the economy after recession. Therefore, the main aim of this thesis was to examine the significant effect exporting and innovation activities have on firm growth and to examine the significant effect innovation has on exporting activities in the Egyptian SMEs.

The thesis has been divided into seven chapters. The first chapter provided an overview of the Egyptian economy profile and on the importance and development of SMEs both in the Egyptian context and worldwide. The aim, objectives, research questions, hypotheses, and contribution were highlighted in the chapter. Chapter two provided a review on the determinants of growth in small firms focusing on firm and owner characteristics and an appropriate tool for measuring growth was presented. Chapter three focused on the role of exporting and innovation activities as determinants of firm growth. The chapter was divided into three sections: the first section focused on 'exporting and growth', the second section on 'innovation and growth' and the third section on 'innovation and exporting' relationships. As a result, the research hypotheses and model were developed. Chapter four explained the methodology used in this research. It reviewed different philosophical approaches, questionnaires used and ethical issues regarding the study. Chapter five described the basic features and characteristics of the sample obtained in the study. It provided descriptive summaries about the sample and the different variables crested for the purpose of the study. Chapter six provided a detailed discussion and testing of the hypotheses developed earlier. The chapter used the multiple regression analysis to test for the impact of innovation and exporting activities on firm growth while probit regression was used

to examine the effect of innovation on exporting. Moreover, the endogeneity problem was addressed and treated using the instrumental variable approach derived from previous studies. The results were presented answering the research hypotheses.

7.3 Discussion of the Main Findings

The results of the first two hypotheses in this thesis: 1) examine the positive significant effect of exporting activities on SMEs growth and 2) examine the positive significant effect of innovation activities on SMEs growth, were generally consistent with previous works in the field; however, the third hypothesis was inconsistent with previous findings which 3) examine the positive significant effect of innovation on SMEs exporting. An extensive literature review was conducted, where the most significant aspects concerning theoretical perspectives on firm growth were examined. The aim of this study was not only to test existing theory regarding the determinants of growth in small firms but, rather use existing theory to help the structure of the empirical research offered in this study. To date, there is a lack of studies examining the relationship between exporting, innovation, and growth in emerging economies specifically in Egypt. Thus, this research attempts to answer the growth, exporting and innovation relationship.

Table 7.1 summarises the results of hypotheses tested and findings. The first two hypotheses were supported while the third was not which was surprising as most studies found a positive significant effect of innovation on exporting activities in SMEs. It should be noted that the 'not supported' hypothesis did not find a direct effect on the exporting activities of SMEs. This could be due to the way SMEs behave in Egypt differs than developed countries which could be reflected in the disagreement of the third hypothesis.

Table 7.1 - Summary of Research Hypotheses Testing

N	***Hypothesis***	***Findings***
H1	Exporting activities significantly affect SMEs growth positively	Supported
H2	Innovation activities significantly affect SMEs growth positively	Supported
H3	Innovation activities significantly affect SMEs exporting activities positively	Not Supported

7.3.1 Exporting Activities and SMEs Growth in Egypt

Exporting activities plays an important role in the growth of firms (Gashi et al., 2014; Esteve-Perez and Rodriguez, 2013) and impact firm performance positively (Littunen and Niittykangas, 2010; Ito and Lechevallier, 2010; Aw et al., 2005; Wagner, 2007; Girma et al., 2004; Greenway and Kneller, 2007; Castellani and Zanfei, 2007). Taking into consideration the importance of exporting for the firm and economy, the first hypothesis aims at examining the significant effect of exporting on the growth of SMEs in Egypt. To date, there is a scarcity of studies that have examined the relationship between exporting and growth in Egypt despite the fact that exporting plays an important role in firm growth by opening new markets overseas. Thus, this study focused on exporting as a strategy for SMEs growth in Egypt.

The findings of this relationship show that exporting activities have a strongly significant positive association with growth which is in line with previous studies. Moreover, a regression analysis was used and when modelling the constructs, exporting improved the model and was significant. This can be explained by the fact that overseas firms have better opportunities to identify new markets which in return will increase their revenue. The knowledge gained through exporting could foster growth and their ability to export overcomes their limited resources and size. Furthermore, exporting can build a network with suppliers and customers that help the firm to perform better. The majority of small firms face resource constraints either financially, technological, or personnel. Thus, by accessing new market the experience, knowledge, and innovation gained will support the growth of firms. While, a significant positive relationship between exporting and growth was found; there are other control variables that were correlated. On the managerial characteristics, there was a clear significant relationship between owner education and exports. Better educated owners seem to be more proactive and interested in foreign dealings thus, more willing to objectively evaluate the advantages and disadvantages of exporting, as well as to possess more managerial knowledge and capabilities.

As a result, the practical implications of this finding suggest that Egyptian SMEs can improve their growth and performance by engaging in exporting activities. Exporting improves firm efficiency levels, fosters innovation, increases productivity and financial performance, provides a greater chance of survival, increases their confidence, thus take risks for future growth. A study done by UKTI (2013) found that 75% of UK firms operating overseas led to innovative products and service; moreover, 85% of UK firms were found to grow due to exporting activities. Therefore, the government should intervene to capture the benefits of exporting and support SMEs development.

7.3.2 Innovation Activities and SMEs Growth in Egypt

Increased competition has pushed firms to develop new products and explore new markets to meet the needs of customers (Lehmann, 2006). Thus, the existence of innovative competitive SMEs is necessary for the growth and prosperity of economies (Ozcelik and Taymaz, 2004) which ensures return on investment (Allocca and Kessler, 2006). Therefore, the importance of studying innovation in SMEs lays in their ability to grow and sustain their activities which improve productivity (Cefis and Marsili, 2006).

With regards to innovation and growth, a positive relationship in employment has been noted (Ngugi et al., 2013; Wang, 2011; Flippetti et al., 2010; Otera-Neira et al., 2009; Mohammad, 2009; Calvo, 2006; Freel and Robson, 2004; Yang and Huang, 2005; Guellec and Van Pottelsberghe, 2004; North and Smallbone, 2000; Treasury, 2000). In line with these findings, the second proposed hypothesis testing the significant effect of innovation on firm growth results showed a significant positive effect. The empirical results reflect an improvement of the model where innovation was found to have a significant percentage in explaining the variation in firm growth.

Innovation provides a competitive advantage where firms can compete in the market both domestically and internationally. When firms provide new ways of production this in return will lead to minimising costs while the introduction of new products will attract customers and eventually will lead to firm growth.

7.3.3 Innovation and SMEs Exporting Activities in Egypt

The relationship between exporting and innovation had attracted many scholars to examine their significant effect on firm growth as they are considered to be an important strategy for firm development and a way to accumulate knowledge and improve firm's capabilities (Ito and Lechevalier, 2010; Roger, 2004; Yang et al., 2004; Requena-Silvenate, 2005: Aw et al., 2005; Castellani and Zanfei, 2007). According to the evolutionary economics by Nelson and Winter (1982), the superiority to sustain innovation will create knowledge that leads to the development of firms capabilities thus, enable them to perform better in the competitive market. From early product-cycle models, innovation was considered as a key driver of export (Vernon, 1966) and many studies examined innovation-export relationship based on the two most common macroeconomics views: neo-endowment and neo technology theory (Roper et al., 2006). For instance, Roper and Love (2002) studied UK and Germany firms; Love and Roper (2015),

Dhanaraj and Beamish (2003) studied U.S. and Canadian firms; Alvarez (2001) for Chilean manufacturing firms; Guvan and Ma (2003) for China firms; Ozcelik and Taymaz (2005) for Turkish firms; Balwin and Gu (2004) for Italian firms. Moreover, a review conducted by Ganotakis and Love (2010) on this positive association between innovation and export was supported by Roper et al. (2006); Lefebvre and Lefebvre, (2001); Bleaney and Wakelin (2006) works. In addition to that, Basile (2001); Pla-Barber and Alegre (2007); Higon and Driffield (2011); Lachenmaier and Wößmann (2006); Nguyen et al. (2008); Cassiman and Golovko (2010); Caldera (2010); Cassiman and Martinez-Ros, (2007, 2010); Becker and Egger (2009); Bernard and Jensen (2004); Iacovone and Javorcite (2008) and Belderbos et al. (2009) found that innovation affect exporting activities in their studies; while other studies found innovation to better explain the positive impact of exporting on productivity (Aw et al., 2005, 2009; Castellani and Zanfei, 2007; Damijan et al., 2008).

While previous studies found that innovation affected the exporting activities of firms, this does not seem to be the case in Egypt. The third proposed hypothesis aimed at testing the positive significant effect of innovation on exporting; surprisingly, this hypothesis was not supported. Although, there was a significant positive correlation between both variables, but it was weak and not reflected in the pobit model. The results indicate that the unit change in innovation did not affect exporting activities in small firms. Moreover, the study took into consideration the potential of endogeneity problem that literature addressed. While, no endogeneity was found, controlling all other variables constant, innovation did not affect exporting.

An explanation for such a finding might be concerned with the innovative product nature. The results of the 141 innovative firms found that the majorities were only modifying or introducing new innovation to the firm thus, it might not be new to the market. Since it is new to the firm but not to the market it does not have a significant effect on the international market. In order to achieve competitiveness, SMEs need to develop unique innovation to provide a unique product rather than imitation. Although some of the Egyptian SMEs innovate, the quality of goods produced is not competitive with other products offered in the international market.

On the other hand, another explanation for this result is due to the fierce competition and the level of innovative products offered by developed countries might be different than those of developing and emerging economies. Therefore, innovation is not found to be a determinant of exporting activities in those firms due to technology advances in developed economies. As a

result, the validity of the theories adopted by developed countries seems not to be applicable in Egypt thus; there is a need to understand exporting behaviour in Egypt in-depth. From the research results, it could be found that the variation in exporting and non-exporting firms performance is due to the increase of access to overall factors of production, access to formal/informal social network, government support, accessibility to a big supply chain, flexibility to adapt to new market and availability of skilled labour. Moreover, the decision to innovate in exporting firms is affected by the cost of innovation, lack of information regarding the market and lack of information regarding technology. Furthermore, the importance of strategic objectives of the firm affects their innovation decision in exporting behaviour such as increase range of goods, increase market shares, enter a new market, increase value added, competitive pressure and desire for profit.

Moreover, the non-significant impact of innovation on exporting might have several causes: reaching international customers or developing new products requires SMEs to diversify their position by either understanding technological innovation or market development; it could be also the manager cognitive perspective regarding firm strategy; or lack of knowledge about international market which is considered to be a platform for reaching new customers and develop new markets.

As a result, Egypt needs to support innovation activities and capabilities within these firms to be able to compete in international markets. Conditions for innovation should be improved such as: public policy environment, infrastructure conditions, social attitudes and cultural factors, all are crucial for successful innovation.

7.4 Contribution to Knowledge

This study provides an important contribution to international entrepreneurship, marketing, management, and international business literature as well as useful insights for business practitioners, and policy makers. This section will discuss the theoretical contribution whereas managerial implications will be discussed in the following section.

This study contributes to existing knowledge in a number of ways. First, this research was instituted to fill the gaps identified by Veglio and Zucchella (2015); Zucchella and Siano (2014); Bell et al. (2003) and Zahra and George (2002) as previous research on exporting activities was

mainly focusing on high-technology industries in UK, USA, and developed countries (Coad and Tamvada, 2012) while few were conducted in emerging economies. Thus, it contributes to a better knowledge of Egyptian SMEs as well as their determinants of growth focusing mainly on exporting and innovation activities. Thirdly, the study investigated the endogeneity associated with exporting and innovation which has not been frequently addressed and definitely not in a developing economy context. Fourthly, the study also contributed to the literature by studying a developing country during the recession which provides important implications for supporting SMEs growth and development of economies.

The study extends the current body of literature about small firm growth by empirically examining the determinants of firm growth focusing on the role of exporting and innovation activities using a large sample of Egyptian SMEs in a broad spectrum of industries activities. The scarcity of data is Egypt and lack of studies makes this thesis eve more valuable. Moreover, the study developed a good understanding of firm growth in Egypt and new insights have been found regarding the export, innovation, and growth relationship within a new context.

More importantly, this study provided an interesting and important finding when the theoretical framework does not hold. The result regarding the significant effect of innovation on exporting was not found to be significant which implies that small firms in developing countries might differ than those in developed countries. Their access to new ideas, development of technology, and opportunities might differ (Phan and Foo, 2004). While a stream of finding supported the self-selection mechanism (causation runs from innovation to export), this was not applicable in Egypt. Small firms did not depend mainly on innovative products to overcome their sunk costs.

7.5 Managerial Implications

The study discussed the importance of exporting and innovation activities in firm growth. Managers in SMEs have to make growth as an important objective and pursue growth strategies such as exporting and innovation. Exporting activity is attractive from the point of view of both managers and public policy makers. From the manager perspective, exporting abroad can be a source for generating more funds which could be used as a reinvestment for growth. Through exporting firms can extend the life cycle of their products and access to new networks. In addition to that, exporting brings experience to firms which improve their performance and productivity. Therefore, managers should increase the number of visits overseas and conferences to improve the international experience. They could form a partnership with foreign

firms to gain experience. Moreover, managers should enter industries they have good knowledge and understanding of to reduce risks.

On the other hand, innovation is an important element in the growth of firms. With limited resources, the Egyptian SMEs may benefit from innovation in their production. Furthermore, by modifying and introducing new products, firms are able to access new markets. Thus, innovation can also help SMEs to increase their competitive advantage in international markets. However, managers could use available technology in their production. Although the use of technology may not create value, but imitating innovation at lower cost may be a source of competitive advantage (Alvarez and Barney, 2001). Moreover, education plays an important role in firm innovation and exporting activities. Managers should focus on increasing the skills and education level of employees to enhance innovation.

Therefore, the results provide guidance for firms seeking growth as the results indicate that both exporting and innovation activities significantly affect the growth of firms in a positive way.

7.6 Policy Maker Implications

The results of this study provide some directions for the Egyptian government on how to help Egyptian SMEs. The SMEs sector in Egypt is fragile and uncompetitive in the global market due to the low investment in R&D and innovation. However, the economy needs stronger SMEs to drive sector growth thus; this section will provide some policy maker implications.

Based on the results presented here it could be found that exporting and innovation activities contribute significantly to the growth of firms thus, the need to enhance both innovation and exporting activities is very important. Egyptian government can help SMEs by increasing their support and awareness through seminars, workshops and direct support. A study done by Roper and Hart (2013) found that government can support SMEs by providing: 1) business information; 2) supporting network and skills development; 3) availability of funds. Moreover, firm's supportive entrepreneurial innovation system may foster innovation and firm growth. Their study provided successful programmes aiming at supporting the growth of firms. The first programme is LEAD (Leading Enterprise and Development) programme in the UK which offers

leadership and management development programmes, taught and informal learning, coaching, consultancy and network for firms which play an important role in the development and success of SMEs. The second programme is Goldman Sachs 10,000 Small Business Programme, which aims at supporting high growth SMEs by providing detailed business growth plan. As a result, an increase of 23% in employment and 16% in turnover was reported. Therefore, such programmes can help in developing and supporting the growth of small firms. In addition to that, Roper and Hart (2013) provided examples of successful incubators that were developed in support of SMEs such as Dutch growth accelerator programme and incubators in Sweden. Based on these successful examples, policy makers in Egypt should adopt such programmes aiming at supporting and developing an entrepreneurial culture.

As a result, the need to establish governmental centres for advice is important covering all geographic areas in Egypt. The responsibility of those centres is to provide guidance and support system for SMEs. This could be achieved through training sessions to develop their entrepreneurial skills, innovativeness, and pro-activeness aspects.

The need to establish more centres that increase the awareness in SMEs regarding exporting and innovation activities. Those SMEs should be well trained in how to deal with customer's needs and wants in the international market. Such training programmes must provide solutions to the problems encountered by SMEs in the international market thus, increasing their experience.

Establish network with developed countries to benefit from their high-growth firm experience, while establishing an Egyptian innovation network that includes researchers, entrepreneurs, and qualified personnel to foster the entrepreneurial culture in Egypt.

Encourage their technology development and increase R&D intensity as innovation plays an important role in firm growth especially in today's competitive market by creating an entrepreneurial culture fostering the role of incubators for technology spill-over.

Establish programmes to assist SMEs on how to apply for a loan when they have a plan to expand their firm internationally. This way the government can prepare the Egyptian SMEs to be

better equipped on how to apply for a loan, thus, increase the success rate of their loan application. The government should enhance the loan guarantee scheme and regulations to motive SMEs to apply for loans.

The need to establish a relationship and inter-firm linkage between small firms and larger ones is required. Small firms could be suppliers for larger firms while gaining experience and information from large firms that facilitates their participation in international markets. In this study, it was found that linking small firms with formal and informal social network was an important factor for exporters and non-exporters growth where 91% of exporters supported this external factor compared to 74% non-exporters. However, both represent a high percentage which calls for the need to link those firms with networks.

Improving the educational system and linking the theoretical approach with real life. The results of this study found that owners with high level of education were more likely to grow, export and innovate compared to other categories.

The need to improve the level and quality of technical and vocational training while stressing on the role of technical skills will help firms to reach international quality standard. In Egypt, a new ministry was established earlier this year concerned with vocational training.

Promote collaboration between SMEs and universities or research institutions. The aim of such program is to promote knowledge transfer from universities and research institutions to the firm; thus fosters innovation activities.

Since the availability of data for SMEs is still lacking, a cooperation to create a common database of SMEs to be shared among all institutions should be established. The problem faced while collecting data for this study was that every governmental institute had their own database and definition for SMEs thus, making it difficult to collect. The researcher had to make sure that a unified definition was applied in order to draw the sample for study. The governmental organisation had complained about the lack of transparency among different governmental institutions and the call for developing a unified database was stressed. By creating a centralised database for SMEs, this will facilitate more comparative studies among different industries, sectors and countries which will provide a better understanding of SMEs.

Due to the lack of resources that SMEs face, the government can encourage them using the e-commerce as a tool for overcoming distance to markets. The development of their marketing approach will enhance the competitiveness of SMEs.

Providing supportive policies and communicate reforms to the public. According to Doing Business report on Egypt (2015), the government had gone through reforms (2008-2016) in order to support SMEs in Egypt as follow:

- Start a business: it became easier by lowering the registration fees and reducing the minimum capital requirement.
- Construction permits: policies aimed at decreasing the fees for registering a new building.
- Register property: reduced the cost of registry property and administrative procedures.
- Getting credit: improved access to credit information (new private credit bureau).
- Trading across borders: exporting become easier through improving customs administration, upgrading port facilities, and introduction of an electronic system for submitting export and import documents.
- Enforcing contract: by creating commercial courts
- One of the main policies is establishing a single access point for start-up paperwork (one-stop shop) at the General Authority for Investment and Free Zone (GAFI). This policy was important in order to minimise bureaucracy and promotes the establishment of SMEs.
- Pay taxes: make it more costly for companies by increasing the corporate income tax rate. However, this policy hinders the development of SMEs.

In addition to that, the government should create a ministry for entrepreneurship development to support and help the entrepreneurial sector. This ministry should focus on improving the culture of exporting and innovation activities among SMEs while strengthening their competitiveness and improve their productivity by providing workshops and training courses. Its main aim is to provide new sector of SMEs with high competitive capabilities to create a new generation of

entrepreneurs able to exploit export opportunities. Moreover, it should review all laws and regulation governing SMEs to reduce barriers facing them.

In conclusion, taking into consideration the importance of SMEs in job creation and growth, the results of this study could contribute greatly to policy makers. The descriptive profile of SMEs discussed earlier will provide an overview on the determinants of growth in SMEs.

7.7 Limitation of the Research

Despite the contribution to the body of literature and the implications for public policy and managerial issues, this research has several limitations. The findings and results of this thesis should be interpreted in the light of several limitations.

- The study did not investigate the detailed motivations and dynamics that propel the complex process involved in the growth of firms. It focused on exporting and innovation activities within the firm. However, an investigation of the motives and dynamics is important in providing the fundamental source of exporting, innovation and growth. Further research is needed to gain a deeper understanding of the role of individual in seeking overseas opportunities and innovation capabilities.

- In an effort to minimise the potential effect of possible internal factors, the study sought to control for key variables that were found to affect the growth of firms. The robust results suggested that the model has good explanatory power R^2= 28%; however, the study did not take into consideration the effect of external variables to the firm. Future studies should control for those variables as they might significantly interact with other variables.

- Although previous studies recommended the use of several measurements to capture firm growth (Davidsson et al., 2006), it was difficult to collect data regarding firms financial position. Growth was measured using the absolute measure; further research should include other measurements to capture the growth of firms such as financial measurements.

- In the sampling techniques, the random stratified sample drawn was disproportionate. The reason for that refers to the nature of the research study. It was important to collect as many

data from both exporting and non-exporting firms to test for the proposed hypotheses. In the sample framework, the number of non-exporters was more than the exporters, so by taking proportionate sample this will affect the number of exporters in the study.

- The study encountered difficulty in collecting data from Egyptian SMEs. Data regarding firms in developing countries are not readily available for public access as they are in developed countries.

- There is a large sector in Egypt operating in the informal sector which is difficult to examine. Although government is encouraging them to be formal, they prefer working informally. They do not like to provide information about their firm either for competitive or taxation reasons.

- Although the data accessed were from the governmental database, there are some concerns regarding the data. Most of the information was gathered using the questionnaire since there was a lack of information regarding the firm innovation activity. It was impossible to distinguish between innovative and non-innovative firms; therefore, the study included a section for innovation to capture such an activity. The problem here is that there was no other way to cross-check the accuracy of data provided by owners.

- This research takes a quantitative approach; however, this empirical approach appears to have limitations to provide a deeper understanding of the complex interactions between the main factors in a more in-depth manner. Therefore, in order to provide an in-depth analysis of this relationship, in-depth case studies and qualitative approach would be helpful in gaining a more significant insight into the relationship between growth, exporting and innovation in SMEs.

- This research design of this study was based on a cross-sectional approach where data was collected at a single point in time. Cross-sectional data lack the ability to detect changing variables and, as a consequence, it is not possible to draw strong conclusions about the causality relation. This kind of study does not allow further understanding of causal problems that occur over time. Their conclusions are based on observations made at a single point in time and do not allow for changes that occur over time. Moreover, growth is a process which requires a longitudinal approach to examine.

- The questionnaire's response rate was very low 6.3%; however, other methods were used to collect the required data such as telephone questionnaires which increased the response rate to 20.3%.

- The questionnaire was collected from the owner of the business, thus respondent bias might occur. All the information gathered was based on the individual honesty and accuracy.

- The study was conducted in a recession period which might not have affected the strength of the relationship under investigation.

7.8 Direction for Future Research

One of the limitations of the research is the use of the cross-sectional approach thus, the need to develop a longitudinal study to capture the casual relationship between innovation and exporting is required. Although longitudinal methods have their own limitation such as high cost and time consuming, it is able to capture causality relationships. This study failed to capture such a relation due to the lack of information. However, further research can be built on this database aiming at investigating the causal relationship between innovation and exporting activities in SMEs. It would be particularly valuable to conduct longitudinal studies to explore firm growth over extended period.

- Since this study was conducted during a recession, the need to develop further study during stability is recommended. A comparative study between two periods will give a better understanding of the determinants of growth in SMEs and how they contributed to the growth of the economy.

- As one of the limitations of the study is that it used a single measurement to capture the growth of firms, the need to develop multiple measurements for firm growth is needed. However, this is difficult in the Egyptian context as the majority of firms do not disclose such information.

- Qualitative studies such as case studies and in-depth interview might be helpful to support the finding from the quantitative approach. The quantitative approach can be limited by the difficulty of data collection thus, qualitative approach is utilised to increase understanding in this research area.

- Extend the study to the MENA region to understand the determinants of growth in SMEs compared to developed countries such as the UK and USA.

- The need to understand and examine informal sectors and compare against formal sectors in Egyptian economy as they constitute a large percentage. Moreover, try to provide a recommendation for government to encourage those firms to become formal thus, benefiting the economy.

7.9 Conclusion

Chapter 1 describes the purpose of this study as: 1) to examine the significant effect of exporting on SMEs growth; 2) to examine the significant effect of innovation on SMEs growth; and 3) to examine the significant effect of innovation on firm exporting activities.

Studies of innovation often result in very diverse and sometimes conflicting conclusions. This is attributed partly to lack of universally accepted definition of innovation and partly to the fact that a wide heterogeneity of sources and outcomes makes innovation difficult to identify and analyse. The overwhelming evidence of beneficial consequences of innovation on firm growth, job creation, and economic growth had pursued studies to investigate and examine such a relation. Moreover, the importance of exporting on firm growth had encouraged this study to examine its effect on firms.

The conceptual model explains the relationship between exporting, innovation, and growth in small and medium-sized firms in Egypt. Propositions and hypotheses were developed and tested by linear regression and probit models, using data from Egyptian SMEs across different industries and geographic areas. The potential problem of endogeneity was taken into consideration while studying the effect of innovation on firm exporting activities. The results of the study indicate that both innovating and exporting activities have a significant effect on firm. However, no significant effect of innovation on firm exporting was found.

In conclusion, this study conceptual framework and empirical results should make valuable additions to literature in international entrepreneurship activities, marketing, and especially in the context that relates to entrepreneurial global mindsets. The empirical results of this study found that what is applicable in developed countries was not applicable in Egypt which raises questions regarding the validity of theoretical framework addressing developed countries. The need to develop more studies regarding developing and emerging countries is recommended. The empirical results of this study also contribute to business practices and governmental agencies by identifying significant roles and impacts of firm activities on its growth. On the other hand, the success of Egypt's economic situation will highly depend on the ability of policy maker to implement rules and regulations boosting the growth of firms. The future growth needs to be much more inclusive than in the past; therefore, the government has to encourage SMEs as they are considered to be central to any new growth strategy.

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Appendices

Appendix 1

Appendix 1.1- Definition of Innovation in Literature

Author (s)	Definition
Schumpeter (1934)	The creation of new products or improving the existing products; new market openings and expansion; the use of new industrial process; developing new organisational firms or structures or developing new sources of raw-materials.
Mansfeild, 1968	The introduction of new equipments in the market as well as the first firm that uses it.
Freeman, 1971	Innovation involves making fundamental or radical changes comprising the transformation of new idea or technological invention into marketable product or process.
Ettlie *et al.,* 1984	The propensity for a firm to innovate or develop new products.
Druker, 1985	The process of equipping in new, improved capabilities or increased utility.
Van de Ven, 1986	The development and implementation of new ideas by people who over time engage in transaction with others within an institutional context (p.591).
Acs & Audretsch, 1988	A process that begins with an invention, proceeds with the development of the invention, and results in the introduction of a new product, process, or service to the marketplace (p.679).
Porter, 1990	Is an attempt to create competitive advantage by perceiving or discovering new and better ways of competing in an industry and bringing them to the market (p.45).
Damanpour, 1992	The adoption of an idea or behaviour, whether a system, policy, program, device, process, product, or service, that is new to the adopting organisation (p. 376).
Ali *et al*., 1995	The uniqueness or novelty of the product to the market
Lumpkin & Dess, 1996	Innovativeness reflects a firm's tendency to engage in and support new ideas, novelty, experimentation, and creative processes that may result in new products, services, or technological processes (p.142).
Subramaniam & Nilakanta, 1996	Innovation is the enduring organisational traits.
Padmore et al., 1998	Any change in inputs, methods, or outputs which improves the commercial position of a firm and that is new to the firm's operating market.
Joh et al., 2001	A process or the introduction of change, morphed into its current standing which includes terms such as creativity, success, profitability and customer satisfaction.
Tidd et al*.,* 2002	Innovation is a process that can be managed, preferably in an integrated way.
Terziovski, 2002	Innovation is a complex process, easily identified as being critical important for organisational success yet not easily managed. It is the constantly introduction change such as new structure, new work procedures, human resource management strategies, and the creation of a work environment to spur innovation.
Luecke & Katz, 2003	The introduction of new thing or method... innovation is the embodiment, combination, or synthesis of knowledge in original, relevant, valued new products, processes and services (p.2).
Hult et al., 2004	The firm's capacity to engage in innovation such as introducing new processes, product or ideas in the organisation.
Shane & Ulrich, 2004	Innovation includes the creation of products, the commercialisation of new technologies, and the birth of new companies (p. 134).
Wang & Ahmed, 2004	An organisation's overall innovative capability of introducing new product to the market, or opening up new markets, through combining strategic orientation with innovative behaviour and process.
O'Dwyer & Gilmore, 2005	Refers to new product/process which addresses customers' needs which are more competitively and profitability than existing solutions.
Hilmi & Ramayah, 2008	The ability to create something new or bring about sound renewals and changes, acting in a way that utilizers this ability (p.43).
O'Dwyer et al*.,* 2009	A series of technical, industrial and commercial steps, the process of taking new ideas effectively and profitability through to satisfied customers.

Compiled by the author

Appendix 1.2- Oslo Manual Definitions of Innovation

Innovation

An innovation is a new or significantly improved product (goods or service) introduced to the market or a new or significantly improved process introduced within your company. An innovation is based on the results of new technological developments, new combinations of existing technology or the utilization of other knowledge acquired by the company.

New Product

A new product is a product whose technological characteristics or intended uses differ significantly from those of previously produced products.

Improved Product

An improved product is an existing product whose performance has been significantly enhanced or upgraded. The innovation should be new to the company; it has not necessarily to be new to the market. It does not matter whether the innovation was developed by your enterprise or by another enterprise. Changes of a solely aesthetic nature, and purely selling of innovations wholly produced and developed by other companies shall not be included.

Product Innovation

A product innovation is a good or service which is either new or significantly improved with respect to its fundamental characteristics, technical specifications, incorporated software or other immaterial components, intended uses, or user-friendliness.

Process Innovation

Process innovation includes new and significantly improved production technology, and new and significantly improved methods of delivering products. The outcome should be significant with respect to the level of output, quality of products or costs of production and distribution. The innovation should be new to the company; the company has not necessarily to be the first to introduce the process. It does not matter whether the innovation was developed by the company or by another company. Purely organizational or managerial changes shall not be included

Marketing innovation

Marketing innovation is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing. Marketing innovations are aimed at better addressing customer needs, opening up new markets, or newly positioning a firm's product on the market, with the objective of increasing the firm's sales.

Organizational Innovation

An organizational innovation is the implementation of a new organizational method in the firm's business practices, workplace organization or external relations. Organizational innovations can be intended to increase a firm's performance by reducing administrative costs or transaction costs, improving workplace satisfaction (and thus labour productivity), gaining access to non-tradable assets (such as non-codified external knowledge) or reducing costs of supplies.

Source: OECD Oslo Manual, 2005

Appendix 1.3- Determinants of Innovation

Author	Determinants of Innovation
Brouwer and Kleinknecht (1996)	R&D intensity, sales growth, SME presence, employees, R&D function, innovation centre, sector, location.
Acs and Audretsch (1988, 1990)	R&D expenditures, capital intensity, employee-union membership, large-firm industry employment, skilled labour.
Hyvärinen (1990)	Personnel participation, inventions, science, different technologies, information, out-side and internal know-how, life-cycles, education, location, competition, economical support, strategy.
Kim *et al.* (1993)	Strategy, organisational structure, management characteristics.
Roper (1997)	Workforce qualification and utilisation, in-house R&D capabilities, network factors.
Hoffman *et al.* (1998)	Qualified workers, owner's leadership and education, degree of market involvement, external linkage, finance, economic situation.
Oerlemans *et al.* (1998)	Transaction, transformation, public knowledge, infrastructure, private knowledge, technology policy.
Hadjimanolis (2000)	Owner characteristics (age, education, prior experience), SME characteristics (size, age, sale turnover, strategy, degree of internationalisation, R&D expenditure, employment of scientist, cooperation with technology providers), environment factors (intensity of competition, environmental change, importance of external barriers, level of networking).
Bougrain and Haudeville (2002)	Industrial cooperation (sector of production, technical partners, linkage to external resources), R&D intensity, number of executives.
Romijn and Albaladejo (2002)	Professional background of the founder, skills of labour, internal efforts to improve technology (R&D expenditures and training), intensity of network.
Freel (2003)	Networking, R&D expenditure, skill level of employees.
Rogers (2004)	Export activity, R&D activity, R&D intensity, patents, market share, employment age, profit margin, management training, foreign ownership.
Bhattacharya and Bloch (2004)	R&D expenditure, R&D intensity, export and important activity, size, profit, growth.

Appendix 1.4- Innovation-Internationalisation Literature Review

Author (s)	Key Construct	Findings
Calantone, Cavusgil, Schmidt &Shin (2004)	International product Adaptation	There is a positive impact of product adaptation on export profitability and performance
Bell, Crick & Young (2004)	Innovation and Internationalisation	Product innovation affected the internationalisation of firms
Qian & Lin (2003)	Innovation	Innovation strategy is found to significantly affect international performance Innovation positively affected firm's success
Bloodgood, sapienza & Almeida (1996)	Innovation	Innovation positively related to firm's growth and sales
Leonidou & Katsikeas (1996)	Product innovation	Product innovation is highly correlated to the firm's exporting stages
Oviatt & McDougall (1995)	Innovation and Internationalisation	Innovation is a key factor in entering global market Innovation as a strategy to overcome resources and experience limitation in small firms
Atuahene-Gima (1995)	Product Innovation	Product innovation has a significant positive effect on firm's exporting
Cavusgil & Zou (1994)	Product innovation & Product adaptation	Product innovation strongly affects export performance. Product adaptation is a result of product innovation
Hott, Hoskisson & Ireland (1994)	Innovation	Innovation significantly affects the firm's performance in global market through promoting its competitive advantage
Samiee, Walters & DuBois (1993)	Exporting and Innovation	Export innovation oriented firms derives significantly greater revenues from export markets
Porter (1990)	Innovation	Competitive advantage in international markets is gained through innovation
Kleinschmidt & Cooper (1988)	International Orientation & Product innovation	Developing new products for international market significantly affected firm's performance
Ghoshal (1987)	Innovation	Innovation creates competitive advantage. A firm exploit technology, brand name or management capabilities
Vernon (1966)	Innovation (IPLC)	Innovation in a firm's domestic market and threat to the firm's monopolistic advantage leads to international expansion

Appendix 2

Appendix 2.1- Cover Letter

QUESTIONNAIRE

DEAR SIR/MADAM,

Determinants of Firm Growth with respect to Exporting and Innovation Activities: Evidence from Egyptian SMEs

---

- The purpose of this letter is to invite you to participate in this research which aims at examining empirically the determinants of growth in the Egyptian SMEs and the extent to which innovation and internationalisation (exporting) of small and medium sized enterprises may influence their growth. Based on the findings, policy recommendations will be proposed, where necessary, to address the problems constraining the growth of SMEs.

- It should not take you more than 10 minutes to fill in; not all sections will be applicable to your firm, please indicate where section is not applicable and move on as appropriate. All information will be treated in the strictest confidence.

- This project is being carried out by the undersigned as part of her studies for the degree of Doctor of Philosophy, under the supervision of ***Professor Mark Hart***, Professor of Small Business and Entrepreneurship; Deputy Director, Enterprise Research Centre at Aston University, United Kingdom.

- If you could kindly return the questionnaire to the researcher by using the freepost envelope enclosed to this address,

The British University in Egypt
El Sherouk City, Cairo, Egypt
Postal No. 11837, P.O.Box 43
Tel : +2 19283 Ext. 1507 Room: G230
(Or, If you wish to complete the questionnaire online please email the researcher on the following address: rasha.hassan@bue.edu.eg)

Thank you in advance for your valuable assistance in this research

Rasha S. Hassan

Appendix 2.2 Questionnaire (English Version)

Section A: Firm characteristics

1. What ownership structure is the firm?

Sole-proprietorship.....□ Partnership.....□ Limited Liability.....□
Public limited ownership.....□ Other (Specify) ....

2. What is the age of the firm? .....

3. Currently, what is the number of employees in the firm, (including yourself)?.....

4. 12 months ago, how many employees were there in the firm?.....

5. What is the main activity of your firm? Please describe its nature (e.g. agriculture, furniture, engineering/electronic/electric, textile/garment/leather, pharmaceuticals & cosmetics, food industry, construction/alloy/ceramic, chemical, service ...etc)

.....

6. How important are the following strategic business objectives to your firm?

Objectives	Not at all important	Not important	Neutral	Important	Very important
a. Maintaining sales of your current products or services in your existing markets.	1	2	3	4	5
b. Increasing sales of your current products or services in your existing markets	1	2	3	4	5
c. Introducing your current products or services into new markets	1	2	3	4	5
d. Developing new products or services for your existing markets	1	2	3	4	5
e. Developing new products or services for new markets	1	2	3	4	5

7. During the past 12 months the firm's turnover has:

Decreased.....□ Same.....□ Increased.....□ Don't know.....□

8. Does the following external factors affect the performance of the firm?

Factors	Agree	Disagree
a. Access to formal and informal social network (links with counterparts such as suppliers, service provider or government)		
b. Availability of skilled labour		
c. Government support (financial/Marketing/training support, regulations/policies)		
d. Access to overall low cost factors of production		
e. Accessibility to big supply chain		
f. Flexibility to adapt to new industry and market		

Section B: INNOVATION

Innovation refers to any new idea that your firm adopted in its products, process or marketing activity.

***PLEASE** think about the innovation activity that your firm undertook and choose the box which corresponds to your answer for each statement.*

9. Is there any formal R&D department in your company?

Yes,.....□ No,.....□ (Don't know).....□

10. Did the firm engage in any research aiming to improve its production, process, or marketing process?

Yes,.....□ No,..... □ (Don't know).....□

11. Did your firm engage in any innovation activity during the past 12 months? Innovation refers to any new idea that your firm adopted in its products, process or marketing activity

Yes,.....□ No,.....□ (Don't know).....□

12. Did the firm try to innovate but had to abandon these activities?

Yes,.....□ No,.....□ (Don't know).....□

13. If the firm had no innovation activity during the past 12 months, why was this the case?

No need due to previous innovation.....□ No need due to market conditions.....□
Factors constraining innovation.....□ Don't know.....□
Other, please specify ..... .

14. How important were the following factors in hindering the innovation activities of the firm:

Factors	Low	Medium	High
a. cost of innovation is too high	1	2	3
b. lack of qualified personnel	1	2	3
c. lack of information on technology	1	2	3
d. lack of information on market	1	2	3
e. uncertain demands for innovative goods/services	1	2	3
f. market dominated by established business	1	2	3

_____***If firm innovated please continue, if did not please go to section (C)***_____

15. Did your firm introduce any new or significantly improved <u>products or services</u>?

Example: improving existing products, creating entirely new products

Yes, <u>new</u> products or services ..... □
Yes, <u>improved</u> products or services ..... □
Yes, both ..... □
No,..... □
(Don't know)..... □

16. Has your firm introduced any new or significantly improved <u>processes</u>?

Example: processes means any business models, ways of working or methods for supplying goods or services; introducing computer-based production applications, automated material, introducing manufacturing information systems

Yes, <u>new</u> processes..... □
Yes, <u>improved</u> processes..... □
Yes, both ..... □
No..... □
(Don't know) ..... □

17. Has your firm introduced any new or significantly improved <u>Marketing methods</u>?

Example: introducing new pricing methods, new distribution methods, new sales approaches or leasing arrangements

Yes, <u>new</u> methods ..... □
Yes, <u>improved</u> methods ..... □
Yes, both ..... □
No..... □
(Don't know) ..... □

18. If yes, are these just new to your firm or are they completely new to the industry?

Just new to the business..... □
Completely new ..... □
Modified..... □
(Don't Know)..... □

19. How important were each of the following factors in your decision to innovate

Factors	Low	Medium	High
a. increasing range of goods and services	1	2	3
b. entering new markets	1	2	3
c. increasing market shares	1	2	3
d. improving quality of goods and services	1	2	3
e. increasing value added	1	2	3
f. competitive pressure	1	2	3
g. desire for growth and profit	1	2	3

Section C: INTERNATIONALISATION

Exporting is considered as a strategy to engage in international business activities, these include indirect exports via domestic intermediaries, direct exports to agents/distributors abroad and/or customers abroad, licensing.

20. Does your firm export?

Yes, firm is exporting ..... □
No, firm is not exporting..... □
(Don't know) ..... □

21. How would you describe the firm's development over the past 12 months in the following areas?

Export sales □ decreased □ same □ increased □ don't know □ not applicable
Total Sales □ decreased □ same □ increased □ don't know
Overall Profit □ decreased □ same □ increased □ don't know

22. How would you describe the competition in the markets that you operate in?

Domestic □No competition □ medium □ High competition □ don't know □ not applicable
Export Market □No competition □ medium □ High competition □ don't know □ not applicable

23. What might trigger the firm's export decision (can pick more than one option)

Government support..... □
Economic/legal support..... □
Information and Financial support..... □
Functional support (e.g. skilled labour, technology) ..... □
Marketing support..... □
(Don't know) ..... □
Others (specify) ....

If does not export, Please go to Q30

24. What internationalisation activity does the firm engaged in?

Exporting..... ..... □
Importing ..... □
Franchising ..... □
Licensing ..... □
Foreign direct investment (FDI)..... □
Contract manufacturing..... □
Overseas subsidiaries..... □
Others (Specify).....

25. What prompted the firm to start exporting? (can choose more than one answer)

Competitive pressure..... □ Desire for growth and profits..... □
Excess capacity ..... □ Efficient production technique..... □
Unique product advantage..... □ Efficient marketing technique..... □
To exploit new technology….. □ Declining domestic sales..... □
Home market saturation ..... □ (Don't know)..... □
Others (Specify).....

26. What is the firm's strategy in overseas market? (can choose more than one answer)

No clear strategy..... □
Target narrow (niche) market..... □
Product differentiation (competing on quality) ..... □
Cost leadership ..... □
Product innovation..... □
Providing sophisticated technology..... □
Expand into many markets as possible ..... □
Opportunistic export only ..... □
Don't Know ..... □
Others, (specify) .....

27. Would you expect the firm to invest in any new systems or processes to enable it to effectively do business internationally?

Yes,.....□ No,.....□ (Don't Know)..... □

28. For how long has your firm currently been exporting?

1-3 years.....□ 4-7 years.....□
8-12 years.....□ More than 12 years.....□
(Don't know).....□

29. What proportion of your current sales is accounted for by overseas sales?

Up to 5%.....□ Between 6 - 15%.....□
Between 16 - 25%.....□ Between 26 - 50%.....□
Between 51 - 75%.....□ Or between 76 - 100%.....□
(Don't know).....□

30. In order to help us to better understand your strategic thinking for the firm, please indicate your level of agreement with the following statements:

	Strongly disagree	**Disagree**	**Not Sure**	**Agree**	**Strongly Agree**
a. Exporting is risky (incorrect market information, unfamiliar foreign business practices, non-payment of goods, possible loss of brand integrity)	1	2	3	4	5
b. The cost of exporting are higher than those associated with domestic sales (higher distribution, information, administrative, insurance, finance assurance costs; foreign exchange risk; high cash flow needs)	1	2	3	4	5
c. The benefits from exporting is high (overcome limited home market, allows expansion to other markets, allows to sell surplus production, exploits economies of scale, adds to the firm's overall profitability)	1	2	3	4	5

Section D: Manager/Entrepreneur Characteristics

31. Are you the founder of the firm?

Yes,...□ No,....□

32.The Number of founders in the firm.....

33. What is the gender of the founder?

Gender	Owner 1	Owner 2	Owner 3	Owner 4
Male				
Female				

34. What is the age group of the founder?

Age	Owner 1	Owner 2	Owner 3	Owner 4
19-29				
30-49				
50+				

35. What is the highest education level of the founder?

Education Level	Owner 1	Owner 2	Owner 3	Owner 4
No Education				
Secondary education/ High School				
Diploma/ Institute				
University Degree				
Postgraduate				
Other (Specify)				

36. How many years of previous work experience did the founder have before establishing this firm?

Experience	Owner 1	Owner 2	Owner 3	Owner 4
None				
Less than 3 years				
3-5 years				
<5-10 years				
More than 10 years				

Thank you for participating

If you would like to be informed of the results of this survey, please supply your contact details below.
Your name: ..... Name of the Company: .....
Address: ..... E-mail: .....

Thank you for your cooperation with us

Sincerely,
Rasha Saad Hassan

Appendix 2.3: The Questionnaire (Arabic Version)

خصائص المنشأة

1. ما هو نوع ملكية المنشأة؟

منشأة فردية..... □ شراكة..... □ شراكة محدودة.....□

منشأة عامة .....□ أخرى (حدد).....

2. كم عمر المنشأة؟.....

3. حالياً، كم عدد الموظفين فى المنشأة (متضمناً شخصك)؟.....

4. كم كان عدد الموظفين الذين قامت المنشأة بتعينهم منذ 12 شهر؟.....

5. ما هو النشاط الأساسى للمنشأة ؟ برجاء وصف طبيعة المنشأة (مثل: صناعية، زراعية، كيمائية، خدمية، تجارية بالجملة/تجزئة، انشائية/هندسية، مستحضرات دوائيةوتجميل، سياحية...الخ)

.....

6. ما مدى أهمية الأهداف الاستراتيجية الآتية بالنسبة لمنشأتك؟

الأهداف	ليس لها أهمية على إطلاق	ليست هامة	محايد	هامة	هامة جداً
أ. الحفاظ على المبيعات من المنتجات أوالخدمات الحالية فى السوق القائم					
ب.زيادة المبيعات من المنتجات أو الخدمات الحالية فى الاسواق القائمة					
ج. ادخال منتجات وخدمات المنشأة الحالية فى أسواق جديدة					
د. تطوير منتجات أو خدمات جديدة فى الأسواق القائمة					
ه. تطوير منتجات أو خدمات جديدة للأسواق الجديدة					

7. فى خلال الأشهر ال12 الماضية, معدل دورة المبيعات للمنشأة

ارتفعت.....□ انخفضت.....□ لم تتغير..... □ لا أعرف..... □

8. الى أى مدى تعد العوامل الخارجية التالية هامة فى إداء المنشأة ؟

العوامل	أوافق	لا أوافق
أ. إمكانية الوصول إلى شبكات إجتماعية رسمية وغير رسمية (روابط مع نظرائك الموردين، شركات خدمية أو حكومية)		
ب.توافر العمالة الماهرة		
ج. الدعم الحكومى (المالى، التسويقى، التدريبى، القوانين واللوائح)		
د.امكانية الوصول الى عوامل انتاج ذات تكلفة اجمالية منخفضة		
ه.امكانية الوصول الى سلسة توريد كبيرة		
و.مرونة التكيف مع الصناعة و السوق جديدة		

القسم (ب): الابتكارات

يشيرالابتكار الى أى فكرة جديدة تبنتها المنشأة فى منتجاتها أوعملياتها أو انشطتها التسويقية. برجاء التفكير فى الأنشطة الابتكارية التى قامت بها المنشأة واختار الاجابة المناسبة

9. هل لدى المنشأة قسم للبحث والتطور؟

نعم.....□ لا.....□ لا أعلم..... □

10. هل شاركت المنشأة فى أى بحث يهدف الى تحسين المنتج أو عملياتها الانتاجية أو أنشطتها التسويقية؟

نعم.....□ لا.....□ لا أعلم..... □ أرفض الاجابة..... □

11.هل قامت المنشأة بأى نشاط ابتكارى خلال الأشهر ال12 الماضية ؟ يشبر الابتكار الى أى فكرة جديدة تبنتها المنشأة فى منتجها، عملياتها الانتاجية أو أنشطتها التسويقية.

نعم..... □ لا.....□ لا أعلم..... □

12. هل حاولت المنشأة الابتكار ولكن اضطرت الى التخلى عنه؟

نعم..... □ لا.....□ لا أعلم..... □

13. اذا كانت المنشأة ليس لديها أى نشاط ابتكارى خلال الاشهر ال12 الماضية ،إلى ما يرجع ذلك

لا حاجة لذلك بسبب الابتكارات السابقة .....□ لا حاجة لذلك بسبب ظروف السوق.....□

وجود عوامل تعوق الابتكار.....□ لا أعلم .....□

أخرى (حدد).....

14. ما مدى أهمية العوامل التالية فى اعاقة الأنشطة الابتكارية

العوامل	مرتفع	متوسط	منخفض
أ.تكلفة الابتكار عالية جداً			
ب.عدم توافر العمالة الماهرة			
ج.نقص المعلومات عن التكنولوجي			
د.نقص المعلومات عن الاسواق			
ه.الطلب على السلع والخدمات المبتكرة غير واضح			
و.يسيطر على السوق منشآت آخرى			

فى حالة الابتكار برجار الاستمرار او الذهاب الي القسم (ج)

15. هل ادخلت منشأتك أى منتجات/خدمات جديدة أو محسنة؟على سبيل المثال: تحسين المنتجات الحالية ، ابتكار منتجات جديدة

نعم، ادخلت خدمة /منتج جديد.....☐
نعم، ادخلت خدمة /منتج محسن.....☐
نعم،ادخل كلاهما.....☐
لم تدخل أى منهما.....☐
لا أعلم.....☐

16. هل ادخلت منشأتك أى عمليات جديدة أو محسنة بشكل ملحوظ؟على سبيل المثال: أى نموذج ادارى أو طرق/أساليب عمل جديدة لتوريد السلع/خدمات أو ادخال تطبيقات انتاج قائمة على الحاسوب أوتطبيقات انتاجية أو ادخال نظم معلومات صناعية

نعم، ادخلت عملية جديدة.....☐
نعم،ادخلت عملية محسنة.....☐
نعم، ادخل كلاهما.....☐
لم تدخل أى منهما .....☐
لا أعلم.....☐

17. هل ادخلت منشأتك أى اسلوب تسويقى جديد أو محسن؟ (على سبيل المثال:ادخال طرق تسعير جديدة أو أساليب توزيع جديدة أوطرق مبيعات جديدة أو ترتيبات تأجير جديدة أوأسواق جديدة

نعم، ادخلت طرق جديدة.....☐
نعم،ادخلت طرق محسنة.....☐
نعم، ادخل كلاهما.....☐
لم تدخل أى منهما .....☐
لا أعلم.....☐

18. اذا كان الجواب نعم، هل هذه الطرق جديدة لمنشأتك أم جديدة تماماً للصناعة ؟

جديدة فقط للمنشأة.....☐
جديدة تماماً للصناعة.....☐
طرق معدلة.....☐
لا أعلم.....☐

19. ما مدى أهميةالعوامل التالية فى اتخاذ القرار للابتكار

العوامل	مرتفع	متوسط	منخفض
أ. زيادة تنوع السلع والخدمات			
ب.الدخول فى أسواق جديدة			
ج.زيادة الحصص السوقية			
د.تحسين جودة السلع والخدمات			
ه.زيادة القيمة المضافة للمنتج أو الخدمة			
و.الضغط التنافسى			
ز.الرغبة فى النمو والربح			

القسم (ج): التجارة الدولية (التدويل)

يعتبر التصدير استراتيجية للمشاركة فى الأنشطة التجارية الدولية، وتشمل هذه الصادرات غير المباشرة عبر وسطاء محليين أو الصادرات المباشرة إلى وكلاء/موزعين فى الخارج أوعملاء للخارج أو منح التراخيص.

20. أى من الإختيارات التالية أدق فى وصف منشأتك؟

المنشأة تقوم بالتصدير.....□
المنشأة لم تقم بالتصدير.....□

21. كيف تصف تطورالمنشأة خلال الأشهر 12 الماضية فى المجلات التالية

مبيعات من التصدير: ارتفعت..... □ لم تتغير....□ انخفضت .... □ لا أعلم..... □ لا ينطبق.... □

إجمالى المبيعات : ارتفع ..... □ لم يتغير....□ انخفض ..... □ لا أعلم..... □

الربح الإجمالى : ارتفع ..... □ لم يتغير....□ انخفض .... □ لا أعلم..... □

22. كيف تصف المنافسة فى الأسواق التى تعمل بها

السوق المحلى : منافسة عالية.... □ منافسة متوسطة....□ لا منافسة .... □ لا أعلم..... □ لا ينطبق.... □

السوق التصديرى : منافسة عالية.... □ منافسة متوسطة....□ لا منافسة .... □ لا أعلم..... □ لا ينطبق.... □

23. أى من الأختيارات التالية قد تشجع المنشأة على قرار التصدير. (تستطيع ان تختار أكثر من اختيار

الدعم الحكومى.....□
الدعم الاقتصادى/القانونى.....□
المعلومات والدعم المالى.....□
الدعم الوظيفى (العمالة الماهرة، التكنولوجيا..إلخ).....□
الدعم التسويقى.....□
لا أعلم.....□
اخرى(حدد).....

اذا لم تقوم المنشأة بالتصدير أذهب إلى س٣٠

24. ما طبيعة التجارة الدولية/ الأنشطة الدولية التى تقوم بها المنشأة؟

تصدير.....□
استيراد.....□
حق الأمتياز(فرانشيز).....□
الترخيص.....□
الاستثمار الأجنبى المباشر.....□
عقد تصنيع.....□
شركة فرعية خارجية .....□
أخرى(حدد).....

25 . ما الدوافع التى دفعت المنشأة لبدء التصدير(تستطيع ان تختار أكثر من اختيار)

الضغط التنافسى .....□ الرغبة فى النمو وزيادة الارباح ..... □
فائض انتاج..... .....□ كفاءة تقنية الإنتاج..... □
وجود منتج متتميز..... .....□ كفاءة التقنية التسويقة..... □
إستغلال التكنولوجيا الجديدة .....□ تراجع فى المبيعات..... □
تشبع فى السوق المحلى..... .....□ لا أعلم..... □
اخرى (حدد) .....

26. ما هى استراتيجية المنشأة فى الخارج؟

لا استراتيجية واضحة.....□
أستهداف سوق ضيقة/صغيرة.....□
المنافسة على جودة المنتج.....□
المنافسة على تكلفة المنتج.....□
منتج ابتكارى.....□
توفير تكنولوجيا متطورة.....□
التوسع فى أسواق جديدة.....□
الاعتماد على فرص تصديرية .....□
لا أعلم.....□
اخرى (حدد) .....

27. هل تتوقع أن المنشأة ستستثمر فى نظم أو عمليات جديدة لتمكينها من القيام بأعمال تجارية خارجية؟

نعم.....□ لا.....□ لا أعلم..... □

28. متى بدأت المنشأة بالتصدير؟

منذ عام .....□ منذ 2-3 عام..... □
منذ 4-5 أعوام. .....□ خلال 5-10 عام..... □
أكثر من 10 أعوام إلى 20 سنة.....□ أرفض الإجابة ..... □

29. ما نسبة مبيعات التصدير الحالية إلى المبيعات الكلية للمنشأة ؟

حتى 5%.....□ بين 6-15% ..... □
16-25%.....□ بين 26-50%..... □
بين 51-75%.....□ بين 76-100%..... □
لا أعلم.....□ أرفض الإجابة ..... □

30.لمعرفة المزيد عن الفكر الاستراتيجى للمنشأة، يرجى الاشارة إلى مستوى الاتفاق على العبارات التالية

العوامل	لاأوافق إطلاقاً	لا أوافق	محايد	أوافق	أوافق بشدة
أ.التصدير مخاطرة (مثل معلومات تسويقية خاطئة، غير ملم بممارسات الأعمال الخاريجيةن، عدم استلام قيمة البضائع، احتمالية فقد العلامة التجارية)					
ب.التكلفة التصديرية أعلى من تلك المرتبطة من المبيعات المحلية (تكلفة توزيع أعلى،تكلفة الحصول على المعلومات، مصاريف ادارية عالية، تأمينات، ضمانات التكلفة التصديرية، مخاطر الصرف الاجنبى، الاحتياج إلى تدفق اجنبى)					
ج.فوائد التصدير عديدة (السوق المحلية محدودة، السماح للتوسع إلى أسواق اخرى، امكانية بيع فائض الانتاج إلى الخارج، استغلال وفورات الحجم، اضافة إلى الربحية العامة للمنشأة)					

القسم (د): خصائص صاحب الأعمال/مدير المنشأة

31. هل أنت مالك المنشأة؟

نعم.....□ لا.....□

32. كم عدد الملاك فى المنشأة؟

.....

33. ما هو جنس مالك المنشأة؟

النوع	المالك 1	المالك 2	المالك 3	المالك 4
ذكر				
انثى				

34. ما هو عمر مالك المنشأة؟

العمر	المالك 1	المالك 2	المالك 3	المالك 4
١٩-٢٩				
٣٠-٤٩				
٥٠فأكثر				

35. ما هو أعلى مؤهل دراسى حصلت عليه؟

مؤهل دراسى	المالك 1	المالك 2	المالك 3	المالك 4
غير متعلم				
أقل من الثانوية العامة الثانوية العامة /				
دبلوم/ معاهد				
بكالوريوس				
دراسات عليا				
أخرى (حدد)				

36. ما هو عدد سنين الخبرة السابقة لمالك المنشأة قبل إقامته للمنشأة ؟

عدد سنين الخبرة	المالك 1	المالك 2	المالك 3	المالك 4
لا يوجد				
أقل من ٣ سنوات				
٣-٥ سنوات				
بين٥-١٠ سنوات				
أكثر من ١٠ سنوات				

مع الشكر

إذا رغبت فى الحصول على نتائج هذا الإستقصاء يرجى استكمال الجزء الاتى:

الاسم:.....

اسم المنشأة:.....

العنوان:.....

البريد الإلكترونى:.....

نشكركم على تعاونك ونتمنى لكم التوفيق

Appendix 3: Assumption for using regression analysis

3.1 Multicollinearity

Multicollinearity refers to the high correlation between two or more predictor variables. There should be no perfect linear relationships; the predictor variables should not correlate highly (Field, 2009). If high correlation exists, this causes problems when trying to understand and find out the contribution of each predictor variable to the success of the model. While it is ideal to find high correlation between a number of predictors with the dependent variable, it is a problem if there is high correlation with each other. To identify the collinearity in the study, a correlation matrix is performed for all the predictor variables and the dependent variable to see if there is any high correlation (0.80-0.90). In this study, the correlation matrix for all the independent variables used did not reflect a problem as all the variables have a correlation less than 0.8.

Furthermore, tolerance value and inverse-the variance inflation factor (VIF) were used to assess the collinearity. The tolerance statistics is derived from $(1-R_i)$, where R_i is the coefficient of determination of a regression of explanatory i on all other explanatory. The multiple R for each predictor variable is made up of its correlation with all of the other predictor variables. Low tolerance, values below 0.1, indicates a multicollinearity problem (Bryman and Cramer, 2009). On the other hand, if the value of the variance inflation factor (VIF), which is calculated = 1/tolerance for that independent variable, is 10 or above, then multicollinearity may be biasing the regression model (Saunders et al., 2009). In this study, both the Tolerance and (VIF) were examined and none had biased the results (Table A.3.1). Therefore, the problem of multicollinearity is not a serious problem in relation to the model.

Table A.3.1- Multicollinearity Regression Model of the Independent Variables

Model	Collinearity Statistics	
	Tolerance	VIF
Constant		
Exporting Activities	.547	1.829
Innovation Activities	.796	1.257
Firm Sole Prop	.831	1.203
Firm Partnership	.358	2.797
Firm Age (young)	.384	2.603
Firm Age (middle)	.396	2.527
Firm Size (small)	.877	1.140
Firm 'low-tech'	.402	2.488
Firm 'high-tech'	.332	3.010
Owner Number	.372	2.691
Owner Gender, male	.831	1.204
Owner Age (young)	.694	1.441
Owner Age (middle)	.709	1.411
Owner Educ., high	.184	5.438
Owner Educ. Medium	.455	2.198
Owner Exp. (high)	.886	1.129

3.2 Normality

Normality is "the most fundamental assumption in multivariate analysis …if the variation from the normal distribution is sufficiently large, all resulting statistical tests are invalid, as normality is required to use *F* and *t* statistics". There are two ways to test for the normality of the data through the look at the shape of the distribution of data or the use of the Shapiro-Wilk test or Kolmogrov-Smirnov test in the SPSS. Those tests compare the scores in the sample to a normal distributed set of scores with the same 'mean' and 'standard deviation'. If p>.05, this means that the data is normal as the null hypothesis assumes that the sample is not significantly different from a normal distribution.

For checking the assumptions of normality a histogram used which found a normal distributed with a bell shaped curve.

3.3 Independent Errors

The residual terms should not be correlated in any two observations (independents). Therefore, Durbin-Watson test is used to check for any multicollinearity and independence of errors. Field (2009) suggested that values less than 1 or greater than 3 may cause problem while, values closer to 2 are better. In this study the Durbin-Watson test for the model was 1.841. This result suggests that the residual terms were uncorrelated in the model (Table A.3.3).

Table A.3.3- Durbin-Watson Test for the Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.568[a]	.322	.291	.17539	1.841

3.4 Ratio of Observations to Independent Variables (predictors)

It is important in a multiple regression analysis to make sure that the sample could be generalised. Therefore, an appropriate sample size is required to impact the statistical power of multiple regression. The minimum ratio level which is required to achieve generalisation of the results is 10:1 (Hosmer and Lemeshow, 2004). In this study the maximum number of independent variables used in the model was 11 variable (including the control variables) with a sample size of 406 respondents. Therefore the ratio of cases is considered to be well above the required level. As for the other questions included in the questionnaire, the main purpose for them is to identify an instrumental variable and other to provide a descriptive analysis while creating an Egyptian profile.

In summary, this section had examined a number of assumptions that underlie the use of regression analysis. If these assumptions were broken, regression analysis will not be accurately used. Alternatively, if the assumptions are met, the model will be accurately applied to the population of interest (Field, 2009). The results of these assumptions supported the use of regression analysis to examine the determinants of growth in small firms with respect to exporting and innovation. However, the multivariate logistic and econometric analyses will be used to examine the significant effect of innovation on exporting behaviour in small firms.

Appendix 4

Appendix 4.1 Chi-Square of Independence Test between Firm and Owner Characteristics and Exporting Activities

Firm Ownership Type * Exporting activities Crosstabulation

			Exporting activities		
			no export	export	Total
Firm Ownership Type	Sole Prop owned	Count	166	76	242
		Expected Count	135.3	106.7	242.0
		% within Firm Ownership Type	68.6%	31.4%	100.0%
	Partnership	Count	38	81	119
		Expected Count	66.5	52.5	119.0
		% within Firm Ownership Type	31.9%	68.1%	100.0%
	Limited firm	Count	23	22	45
		Expected Count	25.2	19.8	45.0
		% within Firm Ownership Type	51.1%	48.9%	100.0%
Total		Count	227	179	406
		Expected Count	227.0	179.0	406.0
		% within Firm Ownership Type	55.9%	44.1%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	43.971[a]	2	.000
Likelihood Ratio	44.518	2	.000
Linear-by-Linear Association	22.821	1	.000
N of Valid Cases	406		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 19.84.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.329	.000
	Cramer's V	.329	.000
N of Valid Cases		406	

Firm Age in year 2013 category * Exporting activities Crosstabulation

			Exporting activities		
			no export	export	Total
Firm Age in year 2013 category	3-5 years	Count	88	31	119
		Expected Count	66.5	52.5	119.0
		% within Firm Age in year 2013 category	73.9%	26.1%	100.0%
	6-10 years	Count	106	126	232
		Expected Count	129.7	102.3	232.0
		% within Firm Age in year 2013 category	45.7%	54.3%	100.0%
	11-22 years	Count	33	22	55
		Expected Count	30.8	24.2	55.0
		% within Firm Age in year 2013 category	60.0%	40.0%	100.0%
Total		Count	227	179	406
		Expected Count	227.0	179.0	406.0
		% within Firm Age in year 2013 category	55.9%	44.1%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	25.914[a]	2	.000
Likelihood Ratio	26.709	2	.000
Linear-by-Linear Association	9.117	1	.003
N of Valid Cases	406		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 24.25.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.253	.000
	Cramer's V	.253	.000
N of Valid Cases		406	

Firm Size 2013 (small/medium) * Exporting activities Crosstabulation

			Exporting activities		
			no export	export	Total
Firm Size 2013 (small/medium)	5-14 Small firms	Count	107	4	111
		Expected Count	62.1	48.9	111.0
		% within Firm Size 2013 (small/medium)	96.4%	3.6%	100.0%
	15-50 Medium firms	Count	120	175	295
		Expected Count	164.9	130.1	295.0
		% within Firm Size 2013 (small/medium)	40.7%	59.3%	100.0%
Total		Count	227	179	406
		Expected Count	227.0	179.0	406.0
		% within Firm Size 2013 (small/medium)	55.9%	44.1%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	101.576[a]	1	.000		
Continuity Correction[b]	99.328	1	.000		
Likelihood Ratio	124.065	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	101.326	1	.000		
N of Valid Cases	406				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 48.94.

b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.500	.000
	Cramer's V	.500	.000
N of Valid Cases		406	

Firm Industry category * Exporting activities Crosstabulation

			Exporting activities		
			no export	export	Total
Firm Industry category	Traditional firms(Agriculture, furniture, Textile/leather/garment, Food)	Count	125	91	216
		Expected Count	120.8	95.2	216.0
		% within Firm Industry category	57.9%	42.1%	100.0%
	Modern (Engineering/electronic/electric, pharmaceuticals/cosmetics, chemical)	Count	48	83	131
		Expected Count	73.2	57.8	131.0
		% within Firm Industry category	36.6%	63.4%	100.0%
	others (construction/alloy/ceramic, others)	Count	54	5	59
		Expected Count	33.0	26.0	59.0
		% within Firm Industry category	91.5%	8.5%	100.0%
Total		Count	227	179	406
		Expected Count	227.0	179.0	406.0
		% within Firm Industry category	55.9%	44.1%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	50.428[a]	2	.000
Likelihood Ratio	56.698	2	.000
Linear-by-Linear Association	5.318	1	.021
N of Valid Cases	406		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 26.01.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.352	.000
	Cramer's V	.352	.000
N of Valid Cases		406	

Owner gender recoded * Exporting activities Crosstabulation

			Exporting activities		
			no export	export	Total
Owner gender recoded	female	Count	40	7	47
		Expected Count	26.3	20.7	47.0
		% within Owner gender recoded	85.1%	14.9%	100.0%
	male	Count	187	172	359
		Expected Count	200.7	158.3	359.0
		% within Owner gender recoded	52.1%	47.9%	100.0%
Total		Count	227	179	406
		Expected Count	227.0	179.0	406.0
		% within Owner gender recoded	55.9%	44.1%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	18.379[a]	1	.000		
Continuity Correction[b]	17.064	1	.000		
Likelihood Ratio	20.534	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	18.334	1	.000		
N of Valid Cases	406				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 20.72.

b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.213	.000
	Cramer's V	.213	.000
N of Valid Cases		406	

Owner Age * Exporting activities Crosstabulation

			Exporting activities		
			no export	Export	Total
Owner Age	19-29	Count	22	5	27
		Expected Count	15.1	11.9	27.0
		% within Owner Age	81.5%	18.5%	100.0%
	30-49	Count	167	109	276
		Expected Count	154.3	121.7	276.0
		% within Owner Age	60.5%	39.5%	100.0%
	over 50	Count	38	65	103
		Expected Count	57.6	45.4	103.0
		% within Owner Age	36.9%	63.1%	100.0%
Total		Count	227	179	406
		Expected Count	227.0	179.0	406.0
		% within Owner Age	55.9%	44.1%	100.0%

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	24.639[a]	2	.000
Likelihood Ratio	25.308	2	.000
Linear-by-Linear Association	24.533	1	.000
N of Valid Cases	406		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 11.90.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.246	.000
	Cramer's V	.246	.000
N of Valid Cases		406	

Number of Owners * Exporting activities Crosstabulation

			Exporting activities		
			no export	export	Total
Number of Owners	one owner	Count	172	78	250
		Expected Count	139.8	110.2	250.0
		% within Number of Owners	68.8%	31.2%	100.0%
	more than 1 owner	Count	55	101	156
		Expected Count	87.2	68.8	156.0
		% within Number of Owners	35.3%	64.7%	100.0%
Total		Count	227	179	406
		Expected Count	227.0	179.0	406.0
		% within Number of Owners	55.9%	44.1%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	43.846[a]	1	.000		
Continuity Correction[b]	42.496	1	.000		
Likelihood Ratio	44.307	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	43.738	1	.000		
N of Valid Cases	406				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 68.78.
b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.329	.000
	Cramer's V	.329	.000
N of Valid Cases		406	

Owner Education * Exporting activities Crosstabulation

			Exporting activities		
			no export	export	Total
Owner Education	Min education or none	Count	60	6	66
		Expected Count	36.9	29.1	66.0
		% within Owner Education	90.9%	9.1%	100.0%
	diploma/institute	Count	84	32	116
		Expected Count	64.9	51.1	116.0
		% within Owner Education	72.4%	27.6%	100.0%
	higher education level	Count	83	141	224
		Expected Count	125.2	98.8	224.0
		% within Owner Education	37.1%	62.9%	100.0%
Total		Count	227	179	406
		Expected Count	227.0	179.0	406.0
		% within Owner Education	55.9%	44.1%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	77.924[a]	2	.000
Likelihood Ratio	84.947	2	.000
Linear-by-Linear Association	75.605	1	.000
N of Valid Cases	406		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 29.10.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.438	.000
	Cramer's V	.438	.000
N of Valid Cases		406	

Owner previous experience * Exporting activities Crosstabulation

			Exporting activities		
			no export	export	Total
Owner previous experience	<5years of experience	Count	112	107	219
		Expected Count	122.4	96.6	219.0
		% within Owner previous experience	51.1%	48.9%	100.0%
	5 years and more experience	Count	115	72	187
		Expected Count	104.6	82.4	187.0
		% within Owner previous experience	61.5%	38.5%	100.0%
Total		Count	227	179	406
		Expected Count	227.0	179.0	406.0
		% within Owner previous experience	55.9%	44.1%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.388[a]	1	.036		
Continuity Correction[b]	3.978	1	.046		
Likelihood Ratio	4.403	1	.036		
Fisher's Exact Test				.045	.023
Linear-by-Linear Association	4.378	1	.036		
N of Valid Cases	406				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 82.45.

b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.214	.000
	Cramer's V	.214	.000
N of Valid Cases		406	

Innovation activities * Exporting activities Crosstabulation

			Exporting activities		
			no export	export	Total
Innovation activities	No innovation	Count	170	95	265
		Expected Count	148.2	116.8	265.0
		% within Innovation activities	64.2%	35.8%	100.0%
	Innovation	Count	57	84	141
		Expected Count	78.8	62.2	141.0
		% within Innovation activities	40.4%	59.6%	100.0%
Total		Count	227	179	406
		Expected Count	227.0	179.0	406.0
		% within Innovation activities	55.9%	44.1%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	21.015[a]	1	.000		
Continuity Correction[b]	20.064	1	.000		
Likelihood Ratio	21.033	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	20.964	1	.000		
N of Valid Cases	406				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 62.17.

b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.228	.000
	Cramer's V	.228	.000
N of Valid Cases		406	

Appendix 4.2 Chi-Square of Independence Test between Firm and Owner Characteristics and Innovation Activities

Firm Ownership Type * Innovation activities Crosstabulation

			Innovation activities		
			No innovation	innovation	Total
Firm Ownership Type	Sole Prop owned	Count	175	67	242
		Expected Count	158.0	84.0	242.0
		% within Firm Ownership Type	72.3%	27.7%	100.0%
	Partnership	Count	60	59	119
		Expected Count	77.7	41.3	119.0
		% within Firm Ownership Type	50.4%	49.6%	100.0%
	Limited firm	Count	30	15	45
		Expected Count	29.4	15.6	45.0
		% within Firm Ownership Type	66.7%	33.3%	100.0%
Total		Count	265	141	406
		Expected Count	265.0	141.0	406.0
		% within Firm Ownership Type	65.3%	34.7%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.912[a]	2	.000
Likelihood Ratio	16.563	2	.000
Linear-by-Linear Association	6.196	1	.013
N of Valid Cases	406		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 15.63.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.204	.000
	Cramer's V	.204	.000
N of Valid Cases		406	

Firm Age in year 2013 category * Innovation activities Crosstabulation

			Innovation activities		
			No innovation	innovation	Total
Firm Age in year 2013 category	3-5 years	Count	91	28	119
		Expected Count	77.7	41.3	119.0
		% within Firm Age in year 2013 category	76.5%	23.5%	100.0%
	6-10 years	Count	139	93	232
		Expected Count	151.4	80.6	232.0
		% within Firm Age in year 2013 category	59.9%	40.1%	100.0%
	11-22 years	Count	35	20	55
		Expected Count	35.9	19.1	55.0
		% within Firm Age in year 2013 category	63.6%	36.4%	100.0%
Total		Count	265	141	406
		Expected Count	265.0	141.0	406.0
		% within Firm Age in year 2013 category	65.3%	34.7%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.587[a]	2	.008
Likelihood Ratio	9.958	2	.007
Linear-by-Linear Association	5.434	1	.020
N of Valid Cases	406		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 19.10.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.154	.008
	Cramer's V	.154	.008
N of Valid Cases		406	

Firm Size 2013 (small/medium) * Innovation activities Crosstabulation

			Innovation activities		
			No innovation	innovation	Total
Firm Size 2013 (small/medium)	5-14 Small firms	Count	88	23	111
		Expected Count	72.5	38.5	111.0
		% within Firm Size 2013 (small/medium)	79.3%	20.7%	100.0%
	15-50 Medium firms	Count	177	118	295
		Expected Count	192.5	102.5	295.0
		% within Firm Size 2013 (small/medium)	60.0%	40.0%	100.0%
Total		Count	265	141	406
		Expected Count	265.0	141.0	406.0
		% within Firm Size 2013 (small/medium)	65.3%	34.7%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	13.225[a]	1	.000		
Continuity Correction[b]	12.388	1	.000		
Likelihood Ratio	14.003	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	13.192	1	.000		
N of Valid Cases	406				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 38.55.

b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.180	.000
	Cramer's V	.180	.000
N of Valid Cases		406	

Firm Industry category * Innovation activities Crosstabulation

			Innovation activities		
			No innovation	innovation	Total
Firm Industry category	Traditional firms(Agriculture, furniture, Textile/leather/garment, Food)	Count	153	63	216
		Expected Count	141.0	75.0	216.0
		% within Firm Industry category	70.8%	29.2%	100.0%
	Modern (Engineering/electronic/electric, pharmaceuticals/cosmetics, chemical)	Count	58	73	131
		Expected Count	85.5	45.5	131.0
		% within Firm Industry category	44.3%	55.7%	100.0%
	others (construction/alloy/ceramic, others)	Count	54	5	59
		Expected Count	38.5	20.5	59.0
		% within Firm Industry category	91.5%	8.5%	100.0%
Total		Count	265	141	406
		Expected Count	265.0	141.0	406.0
		% within Firm Industry category	65.3%	34.7%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	46.366[a]	2	.000
Likelihood Ratio	49.452	2	.000
Linear-by-Linear Association	.248	1	.618
N of Valid Cases	406		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 20.49.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.338	.000
	Cramer's V	.338	.000
N of Valid Cases		406	

Number of Owners * Innovation activities Crosstabulation

			Innovation activities		
			No innovation	innovation	Total
Number of Owners	one owner	Count	181	69	250
		Expected Count	163.2	86.8	250.0
		% within Number of Owners	72.4%	27.6%	100.0%
	more than 1 owner	Count	84	72	156
		Expected Count	101.8	54.2	156.0
		% within Number of Owners	53.8%	46.2%	100.0%
Total		Count	265	141	406
		Expected Count	265.0	141.0	406.0
		% within Number of Owners	65.3%	34.7%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	14.588[a]	1	.000		
Continuity Correction[b]	13.781	1	.000		
Likelihood Ratio	14.446	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	14.552	1	.000		
N of Valid Cases	406				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 54.18.

b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.190	.000
	Cramer's V	.190	.000
N of Valid Cases		406	

Owner gender recoded * Innovation activities Crosstabulation

			Innovation activities		
			No innovation	innovation	Total
Owner gender recoded	female	Count	37	10	47
		Expected Count	30.7	16.3	47.0
		% within Owner gender recoded	78.7%	21.3%	100.0%
	male	Count	228	131	359
		Expected Count	234.3	124.7	359.0
		% within Owner gender recoded	63.5%	36.5%	100.0%
Total		Count	265	141	406
		Expected Count	265.0	141.0	406.0
		% within Owner gender recoded	65.3%	34.7%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.243[a]	1	.039		
Continuity Correction[b]	3.599	1	.058		
Likelihood Ratio	4.555	1	.033		
Fisher's Exact Test				.050	.026
Linear-by-Linear Association	4.233	1	.040		
N of Valid Cases	406				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 16.32.

b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.102	.039
	Cramer's V	.102	.039
N of Valid Cases		406	

Owner Age * Innovation activities Crosstabulation

			Innovation activities		
			No innovation	innovation	Total
Owner Age	19-29	Count	20	7	27
		Expected Count	17.6	9.4	27.0
		% within Owner Age	74.1%	25.9%	100.0%
	30-49	Count	185	91	276
		Expected Count	180.1	95.9	276.0
		% within Owner Age	67.0%	33.0%	100.0%
	over 50	Count	60	43	103
		Expected Count	67.2	35.8	103.0
		% within Owner Age	58.3%	41.7%	100.0%
Total		Count	265	141	406
		Expected Count	265.0	141.0	406.0
		% within Owner Age	65.3%	34.7%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.538[a]	2	.171
Likelihood Ratio	3.526	2	.172
Linear-by-Linear Association	3.507	1	.061
N of Valid Cases	406		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.38.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.093	.171
	Cramer's V	.093	.171
N of Valid Cases		406	

Owner Education * Innovation activities Crosstabulation

			Innovation activities		Total
			No innovation	innovation	
Owner Education	Min education or none	Count	48	18	66
		Expected Count	43.1	22.9	66.0
		% within Owner Education	72.7%	27.3%	100.0%
	diploma/institute	Count	102	14	116
		Expected Count	75.7	40.3	116.0
		% within Owner Education	87.9%	12.1%	100.0%
	higher education level	Count	115	109	224
		Expected Count	146.2	77.8	224.0
		% within Owner Education	51.3%	48.7%	100.0%
Total		Count	265	141	406
		Expected Count	265.0	141.0	406.0
		% within Owner Education	65.3%	34.7%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	47.075[a]	2	.000
Likelihood Ratio	51.192	2	.000
Linear-by-Linear Association	25.136	1	.000
N of Valid Cases	406		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 22.92.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.341	.000
	Cramer's V	.341	.000
N of Valid Cases		406	

Owner previous experience * Innovation activities Crosstabulation

			Innovation activities		
			No innovation	innovation	Total
Owner previous experience	<5years of experience	Count	151	68	219
		Expected Count	142.9	76.1	219.0
		% within Owner previous experience	68.9%	31.1%	100.0%
	5 years and more experience	Count	114	73	187
		Expected Count	122.1	64.9	187.0
		% within Owner previous experience	61.0%	39.0%	100.0%
Total		Count	265	141	406
		Expected Count	265.0	141.0	406.0
		% within Owner previous experience	65.3%	34.7%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.839[a]	1	.092		
Continuity Correction[b]	2.497	1	.114		
Likelihood Ratio	2.836	1	.092		
Fisher's Exact Test				.096	.057
Linear-by-Linear Association	2.832	1	.092		
N of Valid Cases	406				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 64.94.
b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.084	.092
	Cramer's V	.084	.092
N of Valid Cases		406	

Exporting activities * Innovation activities Crosstabulation

			Innovation activities		
			No innovation	innovation	Total
Exporting activities	no export	Count	170	57	227
		Expected Count	148.2	78.8	227.0
		% within Exporting activities	74.9%	25.1%	100.0%
	Export	Count	95	84	179
		Expected Count	116.8	62.2	179.0
		% within Exporting activities	53.1%	46.9%	100.0%
Total		Count	265	141	406
		Expected Count	265.0	141.0	406.0
		% within Exporting activities	65.3%	34.7%	100.0%

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	21.015[a]	1	.000		
Continuity Correction[b]	20.064	1	.000		
Likelihood Ratio	21.033	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	20.964	1	.000		
N of Valid Cases	406				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 62.17.

b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.228	.000
	Cramer's V	.228	.000
N of Valid Cases		406	